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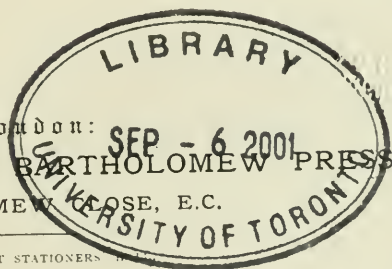
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THE
JOURNAL OF LARYNGOLOGY,
RHINOLOGY AND OTOTOLOGY.

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A CASE OF MELANOTIC SARCOMA OF THE NOSE.¹

BY GEORGE WILKINSON, F.R.C.S.,
Aural Surgeon to the Sheffield Royal Hospital.

History.—H. J——, aged fifty-two, presented himself at the Sheffield Royal Hospital on November 4, 1910, complaining of "a growth in the nose." He had suffered from frontal headache of moderate severity for two years. There had been an increasing degree of obstruction of the left nostril for eighteen months. For some months he had noticed a "substance" within the left nostril, and that the side of the nose was being "pushed out." There was no discharge until three months previously, since when it had been fairly copious, usually streaked with blood, but not offensive. There had been no severe bleeding.

On examination, a mass of growth of dark purple-brown colour was seen filling the left nasal vestibule, and pushing outwards the soft parts of the nose. The skin of the ala nasi was infiltrated, and infiltration of the tissues overlying the nasal process of the superior maxilla could be felt. By posterior rhinoscopy the naso-pharynx was ascertained to be free, but the view within the choana was obscured by secretions. Left side dull to transillumination. No swelling of the orbit or bulging of the anterior or inferior walls of

¹ Specimens, etc., shown at the November meeting of the Laryngological Section of the Royal Society of Medicine.

the antrum. No enlarged glands or pigmentation of the skin. Fundi normal.

A piece of growth was removed by the snare for microscopic examination. Professor Beattie, of the Sheffield University, pronounced the specimen to be melanotic sarcoma.

Operation (November 16, 1910).—Complete removal of the left upper jaw, together with the soft parts of the left side of the nose.

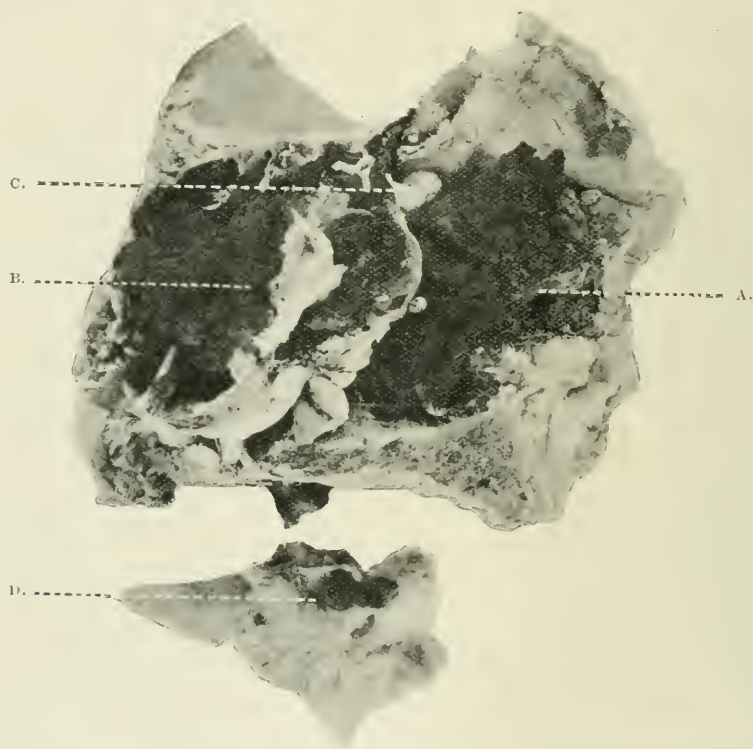


FIG. 1.—Melano-sarcoma of the nose. Photograph of the upper jaw from the nasal aspect. A. Primary growth. B. Polypus. C. Pedicle of polypus. D. Portion of the nasal septum, showing ulcer and diffuse pigmentation.

The skin removed included that covering the ala together with a margin $\frac{1}{2}$ in. in width of the cheek and upper lip. The septum was found to be ulcerated where the growth had pressed upon it at a point about $\frac{1}{2}$ in. within the vestibule. The mucous membrane was infiltrated and the cartilage eroded. Spots of black pigment were scattered in the mucous membrane all over the area of contact with the growth. All the mucous membrane was removed from the left side of the septum, and also the whole thickness of the septum for a distance of $\frac{1}{2}$ in. round the site of ulceration.

Subsequently a plastic operation was done to close the large gap in the face. The ala nasi was restored by a flap taken from the cheek. The wound failed to heal entirely owing to want of support to the flap from below. A small hole, 6 mm. by 3 mm., remained between the ala and the cheek. A further plastic operation to close this defect failed in its object, and the patient is unwilling to have anything further done. The defect in the palate has been closed by a denture and obturator. The patient is now in excellent health and shows no sign of recurrence. There is, how-

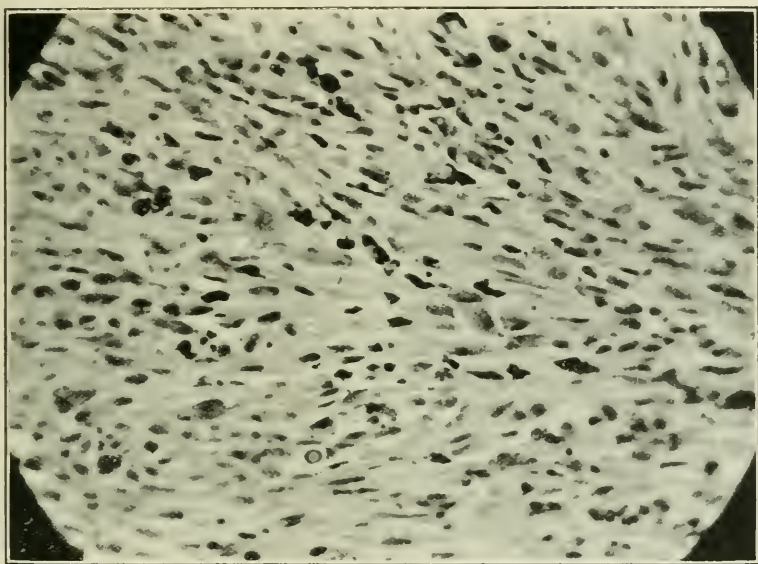


FIG. 2.—Section of the primary growth, showing the disposition of the pigment in the cells.

ever, considerable deformity, owing to the deflection of the nose to the left and flattening of the tip due to the contraction of the gap in the cheek and side of the nose. The depression of the scar is also noticeable.

Examination after removal showed the growth to consist of three distinct portions: (1) A sessile firm outgrowth of rounded projections growing from the inside of the vestibule and side wall of the nose, measuring $1\frac{3}{4}$ in. from before backwards by 1 in. from above downwards. This had infiltrated deeply the soft tissues of the side of the nose and adjacent parts of the cheek and upper lip. The skin of the vestibule is deeply pigmented. (2) An elongated,

smooth, shiny polypus of sooty black colour, springing by a slender stalk from the anterior end of the middle turbinal and extending backwards almost to the choana. This polypus lies completely free, except where attached by its pedicle, and has pushed the side wall of the nasal fossa outwards towards the antrum. (3) The contact infection of the septum already described.

Histological Structure.—A section of the primary growth shows typically the picture of mixed-celled sarcoma. There is almost complete absence of stroma, and no appearance of alveolar arrange-

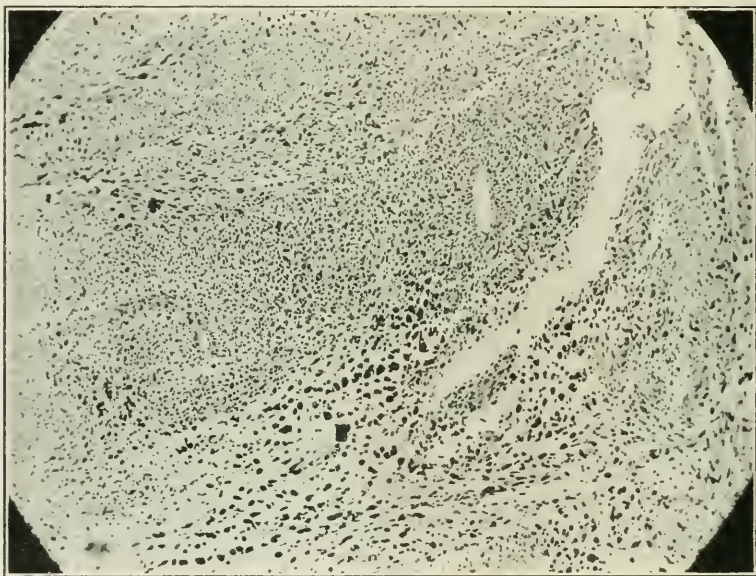


FIG. 3.—Section of polypus. In the lower part of the photograph are seen degenerated cells, almost wholly converted into pigment, occupying lymph-spaces.

ment. Bands of spindle cells partly enclose and partly merge into areas of round and polygonal cells. The cells are of all shapes and sizes, but no multinucleated giant-cells are present. Their nuclei are large and exhibit signs of active division by mitosis, side by side with appearances of vacuolation and degeneration. The pigmentation is diffused throughout the specimen, varying in amount in different parts of the section. In cells in which pigment is present the granules are grouped around the nucleus, and when considerable in quantity the nucleus is degenerated. In many cases the cells are replaced by deposits of pigment. Very few

blood-vessels are present, but plentiful blood-spaces between the cells. Where blood-vessels are seen the cells in their walls are deeply pigmented.

The appearance under the microscope of the ulcer on the septum is similar to that of the primary growth, except that the pigment is mostly on the surface. Beyond the ulcer the mucous membrane shows no sign of infection, but seems to have absorbed pigment from the surface of the tumour. The pigment-granules are deposited between the epithelial cells and in the submucous tissue.



FIG. 4.—Section through the edge of the ulcer on the septum. Large masses of pigment are seen in the superficial parts of the ulcer.

The polypus closely resembles the primary growth in structure. The form of the cells is identical, but they are not quite so closely packed, and more stroma is visible. Here and there are areas of loose reticular tissue, within the spaces of which are globular masses of pigment showing scarcely any vestige of cell structure. They give the impression of degenerated cells transformed almost entirely into masses of pigment, which have passed out of the tissues of the tumour into the lymphatic spaces.

Melanotic sarcoma is among the rarer varieties of malignant tumour found in the nose. Up to the present only ten cases have

been reported as being of this nature. Cozzolino (1) reported a case in full in 1904, and he gives references to eight others. He regarded some of the cases as rendered doubtful by the absence of any description of histological findings. He refers to a case under his care of what he terms "pseudo-melanotic growth," in which the pigmentation was the result of old hæmorrhages into a simple polypus. A search through the *Centralblatt für Laryngologie* has resulted in the finding of only one further case of primary melanotic sarcoma in the nose, described by Mendoza.(2) No case has been recorded in this country.

The question of the origin of melanotic growths has long been a subject of controversy, and cannot be regarded as entirely settled at the present day. It is, however, generally accepted that they arise in certain cells, stellate or spindle in form, found in the skin and choroid, and less frequently in the mucous membranes of the mouth and nose. The name "chromatophores" has been given to these cells, and their function is to produce pigment. They were first described by Abdy (3) in 1889. They are found in the skin of negroes and of animals with deeply pigmented skins, principally in the sub-epithelial layer of the corium, but also between the cells of the rete Malpighii. They are also found in the pigmented parts of the skin of white men, such as the areola of the nipple and in moles.

The intense pigment-forming activity of these cells in melanotic sarcoma is shown by Abel and Davis's (4) statement, that whilst the entire skin and hair of a negro may be estimated to contain about 1 grm. of melanin, as much as 300 grm. has been obtained from secondary deposits in the liver alone in a case of melanotic sarcoma. Melanin is probably not derived from the hæmoglobin of the blood. It does not contain iron, but is rich in sulphur.

The histological appearances of most of these growths are those of spindle- or mixed-celled sarcoma. To quote Cornil and Ranvier, "Were it not for the pigment the sarcomata with which we are dealing (melanotic) could not be differentiated from the great majority of ordinary sarcomata, or one may say, that which constitutes the specific character of these tumours is the presence of black granules in the interior of the cells."

It is well known that melanomata occur in another form in the skin—the alveolar. These are classed by some authors as carcinomata, under the name "melano-carcinoma." Unna, indeed, believes that the chromatophores themselves are of epithelial origin. This is not generally held, and most authorities regard the alveolar form, like the rest of these tumours, as true sarcomata.(5)

The case reported above presents some features of pathological and surgical interest. One unusual feature is the slowness of growth of the tumour, as inferred from the presence of headache for two years and nasal obstruction for eighteen months before he came under observation. It might be suggested that these symptoms were due to the polypus, pre-existing as an ordinary nasal polypus, and that the headache pointed to an ethmoiditis giving rise to the polypus. The sessile melanotic mass would then have to be regarded as arising subsequently, and independently, and later infecting the polypus with sarcomatous elements. Certainly the polypoid tumour, except for its colour, presented all the appearances of an ordinary nasal polypus. It was perfectly smooth and shiny and free from any connections, except the slender pedicle which attached it to the anterior ethmoid region. On the other hand the histological appearances do not suggest infiltration of a pre-existing tissue with melanotic elements, the polypus throughout its substance resembling the primary growth closely in structure, though not quite so densely packed with cells, and showing rather more stroma. Further, the growth of polypi accompanying malignant tumours of the nose is quite usual, probably as the result of a secondary ethmoiditis set up by the presence of the growth. Supposing such a polypus were to become infected with malignant elements through the blood-vessels or lymph-channels in the pedicle at an early period of its growth, it seems quite probable that, having already a polypoid form, it would continue to develop as a free-lying polypus, though presenting the histological appearances of a highly malignant tumour. Such, I think, is probably the true explanation of what has occurred in the present case. With regard to the probable duration of the case before it came under observation, it must be remembered that, though melanotic sarcomata are usually rapid in their development, they do vary a good deal in their rate of growth.

The contact infection of the septum is interesting. Actual growth of sarcomatous elements appears only to have taken place around the site of the ulcer on the septum. As this is placed just where the pressure of the tumour against the septum would be greatest, it is probable that a destruction of the surface epithelium preceded the invasion of sarcoma-cells. Near the surface of the ulcer are dense masses of pigment. Beyond its margins the septal mucous membrane shows signs of having absorbed pigment from the primary growth, the granules of which are to be seen between the epithelial cells and in the subepithelial tissue. The absorption

of pigment from the primary growth, without invasion of cell elements, illustrates the fact that the pigment is a cell secretion, which is readily discharged into the surrounding tissues and passes freely into the cells of the stroma, lymphocytes, the lymphatics and blood-vessels. A similar deposition of pigment is seen in other parts of the mucous membrane of the nasal fossa, as, for example, that covering the nasal bone above the level of the tumour.

Site of Origin.—This was probably close to the junction of the skin of the vestibule with the mucous membrane on the outer wall of the nose. The infiltration of the underlying tissues is greatest at this point, though the growth has taken place backwards along the mucous membrane of the nose. The skin of the vestibule is often pigmented, and there appears to be no reason why melanomata should not occur as frequently here as elsewhere on the skin. In cases previously reported, the tumours have originated from the septum, middle fossa, inferior and middle turbinates. Cozzolino believed his case to have sprung from the antral wall.

In all the cases but one whose history I have been able to obtain the sequence of events from the surgical standpoint may be summarised as follows: Partial removal, rapid local recurrence, extensive operation, rapid generalisation, and death. Evidently attempts to remove the growth from the nasal fossa are inadmissible in dealing with this form of sarcoma. In Cozzolino's case recurrence took place within one month of removal of the visible growth. The upper jaw was then removed by Prof. Gallozi. Death from generalisation took place one month later. Kummel's and Mendoza's cases ran a very similar course. Heymann's case, on the other hand, showed no recurrence until four years after operation, when the growth returned.

One of the most noticeable features of melanotic sarcomata from the surgeon's point of view is the rapidity with which dissemination takes place if the primary growth is disturbed in any way, as by incomplete operative removal. Having this in mind the writer determined, so soon as the diagnosis was made, to remove the tumour intact within its bony case by complete excision of the upper jaw together with a wide margin of the tissues of the face surrounding the infiltrated area around the ala nasi. Any procedure less radical would probably have resulted in the growth being broken up during the operation, which would have greatly increased the risk of early dissemination. Though the patient is at present in perfect health, and shows no sign of recurrence or

metastases, the time (one year) since the removal of the sarcoma is too short to enable one to speak with any confidence as to the future course of the case.

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- (2) SUAREZ LE MENDOZA.—Society for Laryngology, Otology, and Rhinology in Paris, February 12, 1904, *Centralblatt f. L.*, 1905, p. 88.
- (3) ADAMI.—"General Pathology."
- (4) *Ibid.*
- (5) RIBBERT.—*Beiträge zur Path. Anat.*, vol. xxi, 1897, where the origin of melanomata from chromatophores and the nature of these cells is fully discussed.

DISCUSSION ON THE DIAGNOSIS AND TREATMENT OF CONDITIONS IN THE ACCESSORY NASAL SINUSES GIVING RISE TO OCULO-ORBITAL SYMPTOMS.¹

OPENING PAPERS.

I.—PROF. A. ONODI,

Director of the Rhino-Laryngological Clinique of the University in Budapest.

WE have to deal with the important subject of diseases of the accessory sinuses of the nose leading to oculo-orbital symptoms. While these conditions may arise independently of one another or may be accessory to each other, it must be remembered that there are numerous others which give rise to similar visual disturbances. We shall consider these oculo-orbital symptoms, the apparent result of manifest and latent accessory sinus disease, and examine carefully their relative value from the standpoint of diagnosis and treatment.

The following oculo-orbital symptoms have been observed apparently to follow accessory sinus disease: Swelling and œdema of the eyelids, epiphora, blepharospasm, peridacryocystitis and dacryocystitis, fistula of the tear-sac, perforation of the nasolacrimal duct, orbital emphysema, circumscribed abscess in the

¹ At the meeting of the British Medical Association at Birmingham, July, 1911, Section of Laryngology, Rhinology, and Otology.

inner canthus, orbital periostitis, subperiosteal abscess, exophthalmos, orbital phlegmon, orbital abscess, fistula formation, chemosis, thrombo-phlebitis of the ophthalmic plexus, diplopia, limitation of the eye movements, bulbar and periorbital neuralgia, retrobulbar pain, colour scotoma, enlargement of the blind spot for colours, narrowing of the field of vision, retrobulbar neuritis, choked disc, amblyopia, amaurosis, thrombosis of the central vein of the retina, optic atrophy, temporary and permanent paralysis of the eye-muscle nerves, neuro-retinitis, cloudiness of the lens, asthenopic disturbance, bitemporal hemianopsia, paralyses of the associated movements, opacities of the vitreous body, iritis, perforation of the bulb, and finally post-operative visual disturbance and blindness.

The causal connection of the oculo-orbital symptoms and manifest accessory sinus disease can in most cases be established, although in rare cases both diseases may exist independently of each other.

In latent accessory sinus disease where the rhinoscopic examination is negative, and where the ophthalmoscope cannot elucidate the cause of the oculo-orbital symptoms, a very careful examination is demanded as much in the interests of diagnosis as of treatment.

We shall speak first of all of the *diagnostic value* of the individual oculo-orbital symptoms, and particularly of that symptom which, as the first and earliest one, gives rise to the suspicion of disease in the accessory sinuses. Birch-Hirschfeld brings forward as a very important and early symptom of tumour and suppuration in the posterior sinuses a developing central scotoma the apparent result of damage to the vulnerable papillo-macular bundle. As differential diagnosis he lays stress on the unilateral quick development and the transition from a relative to an absolute scotoma which is combined with a peripheral narrowing of the visual field. It is maintained by Hoewe that the enlargement of the blind spot for colour is the first and foremost symptom to be considered and the central scotoma later.

The existence of the relative central scotoma has been observed, and we have also seen it associated with empyema of the antrum of Highmore, of the frontal sinus, of the ethmoidal cells, and sphenoidal sinus. Only single observations have been made relative to the enlargement of the blind spot (Hoewe, Kleign). We saw this symptom in three cases, with an added scotoma in two of them. Not only the central scotoma, but also the enlargement of the blind spot can arise from other causes,

having nothing whatever to do with the accessory sinuses of the nose. We have observed also the absence of the central scotoma and visual disturbance in empyemata of the posterior sinuses, and in one case where a sarcoma filling up the nasal cavity and an empyema of the posterior sinuses were co-existent.

Not only the central scotoma, which Birch-Hirschfeld lays stress on, but also the assertion of Mendel and Lapersonne, that unilateral neuritis is characteristic of nasal origin, have absolutely no value; for in unilateral as well as bilateral accessory sinus disease these symptoms may appear on both sides. They have, however, this value in diagnosis, that they can direct the attention of the physician to a latent affection of the accessory sinuses. They are even oftener met with in manifest disease. While the narrowing of the visual field is likewise to be met with in sinus disease, it may be absent. The assertion of Berger's that the narrowing of the visual field is characteristic of tumour of the sphenoidal sinus, and the assertion of Bryan that in empyema of the ethmoidal cells the visual field is *always* narrowed, cannot be maintained. The field of vision must, however, always be examined, and if there is a shrinkage that fact is of great importance.

In doubtful cases and in negative findings the Röntgen photograph is helpful, although a dark shadow on one side sometimes leads to error. Finally, in doubtful cases the exploratory opening of the accessory sinuses in the interests of diagnosis is useful.

Bitemporal hemianopsia points to a lesion of the chiasma, which may be present as much in unilateral as in bilateral disease of the posterior ethmoidal cells and the sphenoidal sinuses, just as frequently paralyses of the eye muscles are the result of tumours in the posterior sinuses, and, more rarely, of empyemata in that region. In addition to the characteristic symptoms of neuritis and optic atrophy one must take into consideration two facts, namely, that the fundus oculi, in spite of existing visual disturbance, may have a normal appearance, and further, that in spite of the rhinoscopic findings, the posterior sinuses may be diseased. As everyone knows, the ophthalmoscopic changes need not be in proportion to the amount of visual disturbance. With normal mirror findings a very high grade of visual disturbance can exist. On the other hand, with pronounced papillary hyperæmia and swelling, the sight can be normal. Just as much also is it the case that in injuries of the optic nerve behind the point of entrance of the central artery of the retina and in fracture of the optic canal, in spite of complete blindness, the ophthalmoscopic findings can remain

practically normal. In accessory sinus disease, venous hyperæmia, slight swelling, blurring of the margin of the papilla, great fulness of the retinal veins, and sometimes narrowing of the arteries have been observed. In a few cases the prominent papilla showed the picture of a choked disc. Frequently we meet with typical optic neuritis.

In osteomata of the frontal sinus, ethmoidal cells and sphenoidal sinus the absence of apparent inflammation in the orbit would till now be regarded as the rule. Still there are a few cases on record which have been complicated by orbital phlegmon.

According to Kuhnt, the diseases of the lacrymal apparatus have in 93·7 per cent. a nasal origin. According to Birch-Hirschfeld the orbital inflammations arise as a consecutive disease from the frontal sinus in 29·8 per cent., from the antrum of Highmore in 21·8 per cent., from the ethmoidal cells in 20·5 per cent., from the sphenoidal sinus in 6·1 per cent., and in 14·7 per cent. from pansinusitis. Retro-bulbar neuritis and optic atrophy have been observed in more than 150 cases. Five cases of post-operative blindness have been recorded, caused partly indirectly through fracture of the optic canal, and partly by direct lesion of the optic nerve. Under this is also recorded contra-lateral blindness.

These cases and those of contra-lateral visual disturbance and blindness are explained in our writings on the anatomical relations.

We now pass to consider the indications for therapeutic measures in manifest accessory sinus disease with these known oculo-orbital complications.

It is known that visual disturbance of nasal origin may heal spontaneously as well as under simple treatment. The case of Copper and Lor is to be mentioned, in which an optic neuritis healed in spite of the refusal of the patient to have her chronic sphenoidal empyema treated by any surgical interference. Similarly we know of cases where the operative procedures have not helped the visual disturbance, and in which the blindness has continued. But many cases followed by healing are recorded in the literature. Worthy of notice also are those cases of rapid healing, where the withdrawal of blood by resection of the middle turbinated bone, and by opening up the ethmoidal cells and sphenoidal sinus in the absence of serous or suppurative secretion have removed the visual disturbance. We must, however, state that several cases have to be put out of court because they do not stand criticism. Moreover, there is an absence in very many cases of any

report of further progress, so that we do not know whether they may be definitely cited as healed. This point may be illustrated by a striking example which appears in a well-known text-book. A case is there mentioned as an extremely successful result, and is also cited as such in other special works, whereas in point of fact the case is not cured, and has since been declared to have greater visual disturbance than before!

The causal relationship between oculo-orbital disturbance and disease of the accessory sinuses has been proved by many therapeutic results.

With regard to *therapeutic measures*, we shall confine ourselves to the indications in manifest and latent accessory sinus disease.

In empyema of *the antrum of Highmore* where it leads to œdema of the face, œdema of the orbital cellular tissue, amblyopia, amaurosis, hyperæmia, and obliteration of the fundus, etc., thorough opening and treatment by the endo-nasal route may be tried. At present many successful results have been attained in this way. Should this interference lead to an undesirable result, or if it is supposed that greater changes exist in the antrum, or if severe oculo-orbital symptoms are present, the wide radical opening and thorough evacuation through the canine fossa must be undertaken without delay. In orbital phlegmon, orbital abscess, and fistula, one must incise and drain, and eventually, if necessary, lay the orbital cavity widely open from without.

In *frontal sinus* empyema and mucocoele of this cavity, if oculo-orbital complications arise, the sinus must at once be freely opened by the radical method. Naturally, as the anterior ethmoidal cells are usually affected too, they should be opened and evacuated at the same time. By these radical measures one is able to effect the treatment of orbital phlegmon, the emptying and drainage of subperiosteal abscess, and of abscess of the orbital cellular tissue.

Radical endo-nasal opening and evacuation of *the ethmoid cells* is indicated in complications due to ethmoidal empyema. It is possible also by this method to treat orbital abscesses due to perforation of an ethmoidal suppuration into the orbital cavity. If it leads to a suppurative periostitis or orbital phlegmon the emptying of the abscess may be hastened by opening it at the inner canthus, or the opening may be enlarged, so that in either case drainage is established. If one does not expect perforation in an outward direction, or if there is a fear of, or there is an already existing thrombo-phlebitis, then the opening of the ethmoidal labyrinth must be practised at once. In mucocoele of the ethmoid, experience

speaks for the success of endo-nasal treatment. This method is also suitable for cases of limited visual disturbances and optic neuritis.

The endo-nasal radical opening and evacuation of the *sphenoidal sinus* is indicated in every case of complication due to this cause. Limited visual disturbance may be successfully treated by endo-nasal interference. In complications in acute and chronic cases one must endeavour to prevent the spread of the inflammatory process from the suppurative periostitis to the optic nerve.

In slight cases of complication due to *combined* accessory sinus disease endo-nasal treatment may be tried, that is to say, the evacuation of pus, good drainage, wide opening of the antrum, resection of the middle turbinated bone, wide opening of the ethmoidal cells and sphenoidal sinus may be obtained by the endo-nasal route. If we fear later complications or if severer symptoms present themselves the radical operation must be undertaken without delay. In empyemata of the antrum and frontal sinus the well-known radical operations may be employed. In empyemata of the antrum of the ethmoid region and of the sphenoidal sinus one may open the antrum from the canine fossa and the ethmoid and sphenoid by the endo-nasal route. If necessary in nasal obstruction one may open and evacuate the ethmoidal cells and the sphenoidal sinus through the antrum. Finally, cases of *orbital complication* may be opened from the orbita and suitable drainage of the inflamed or suppurating orbital tissues obtained. In severer orbital complications the wide opening of the orbita after the method of Krönlein has been employed. Further, Axenfeld proposes at the same time to add to this the removal of the diseased ethmoid by lengthening the incision through the eyebrow as far as the root of the nose. Kuhnt does not support this proposal.

We have still to speak about those therapeutic measures in cases *where the rhinoscopic findings* concerning the sinuses are *negative*, other than the existence of swelling of the middle turbinated bone. In several such cases the resection of the middle turbinal and opening the ethmoidal and sphenoidal cavities removes the visual disturbance. This causes a local withdrawal of blood and relief of pressure. It may be carried out in every case in which the ophthalmoscope cannot suggest a cause of the visual disturbance. Experience has shown good results in several cases.

The explanation of the five published cases of *post-operative blindness* is to be found in my work on the anatomical relations.¹

¹ Onodi, "The Optic Nerve and the Accessory Sinuses of the Nose," London, 1910.

In this monograph we emphasise particularly the care that should be taken in enretting the posterior ethmoid cells and the sphenoidal sinus, so that the optic canal which frequently runs free there may not be artificially opened.

Finally, we must refer briefly to indications for treatment in *diseases of the lacrymal apparatus*. Speaking generally, when dealing with dilation of the lacrymal sac, a modification of Blaskovich's operation is the best method; and in stenosis of the lacrymal duct one should perform an endo-nasal "window" resection of the duct. The lacrymal duct should be exposed from the outer side through the maxillary antrum by way of the canine fossa in cases of empyema of the maxillary antrum, and also in those cases of marked stenosis of the lacrymal duct, where previously other operations had been done, such as resections of the turbinal and nasal septum.

II.—DR. ADOLPH BRONNER (Bradford).

THE subject is a very important and also a very large one, and it is impossible to go into all the details. A great number of diseases of the brain, eye and orbit are due to affections of the nasal accessory sinuses.

The commonest affections of the accessory nasal sinus giving rise to oculo-orbital symptoms are :

- (1) Empyema, following rhinitis, often due to scarlet fever, measles, influenza, erysipelas, typhoid, etc.
- (2) Diseases of the bone; secondary to empyema, due to syphilis or tuberculosis.
- (3) Growths.
- (4) Wounds.

There are often congenital defects of the bone which facilitate the spread of disease from one sinus to the other, or to the brain and orbit.

Transillumination and X rays are useful for diagnosis, especially the latter in case of frontal sinus disease. X-ray treatment should be tried in some cases. In cases of syphilis energetic treatment is necessary; mercurial inunctions, very large doses of potass. iodid. with decoctum sarsæ co., and, if necessary, "606." In tubercular cases we inject tuberculin. Vaccine (if possible, auto-genous), or serum treatment should be tried in all chronic or severe cases. Too little attention has been paid to this method. In

many cases several of the accessory nasal sinuses are involved, and treatment of one sinus alone is useless. Killian's light head-bath treatment, menthol oil spray, suction, and Stein's carbonic acid gas treatment are useful chiefly in acute cases.

(1) *Empyema of the Maxillary Antrum*.—The most reliable method of diagnosis is to wash out the antrum through the naris. Bad smell and taste are often the only symptoms. It should be treated by making a large intra-nasal opening through the inferior nasal meatus (with removal of the anterior part of the lower turbinate), and often also through the canine fossa. Alveolar process operation is not efficient. Diseased teeth, dental cysts, etc., should be removed. As all, even the most trivial, nasal operations, can give rise to severe local and general affections, the patient should always remain in bed, and be watched for a few days after operation. If there is a growth of the maxillary antrum or much diseased bone (tuberculosis), the upper jaw should be removed. These operations are most successful. If the orbit is affected, there is generally phlegmonous cellulitis, due to thrombosis of the veins, but there may also be cavernous sinus disease and thrombosis of the central retinal vein. Cavernous sinusitis is often due to diseased tonsils or pharynx; generally overlooked. Conjunctivitis, asthenopia (muscular and retinal), cyclitis, iritis, retinitis, choroiditis, cataract, may be present. They are chiefly due to congestion and toxins.

(2) *Empyema of Frontal Sinus*.—Pain over the frontal sinus may also be due to disease of the maxillary antrum. If the frontal sinus is affected the pain is more severe and is intermittent. The upper or inner wall of the orbit is often painful on pressure. The eyebrow is often painful on percussion, and local swelling may be noted. If the orbit is affected (caries, cellulitis), Killian's or even a more extensive operation (Watson-Williams) should be performed, as in most cases the anterior ethmoidal cells are also diseased. If there is optic neuritis, or cerebral symptoms, the posterior wall of the frontal sinus should be opened up and the brain exposed. In some cases the frontal sinus extends backward as far as the optic foramen. If the symptoms are not urgent, it is always advisable to try intra-nasal treatment first. Removing part of the middle turbinate and any small recurrent polypi, so as to get free drainage, is often most successful. There is always a danger of disease of the diploë after the external operation on the frontal sinus. Periorbitis of the orbit, with consequent cellulitis, is more common than primary cellulitis. In cases of hydrops of the sinus a less extensive operation suffices. Radical operation should never be performed

if there is much local inflammation. One should incise and wait till the acute symptoms are over.

(3) *Empyema of Ethmoidal Cells*.—There is often pain on pressure on the inner wall of the orbit with a crackling noise. Periorbitis of the orbit is often mistaken for disease of the lacrymal sac. There is often profuse discharge and crusts. We operate intra-nasally first, removing the middle turbinate and enlarged bulla ethmoidalis. Extra-nasal operation may, however, be necessary. Symptoms often disappear after intra-nasal treatment. A large incision extending below lacrymal sac should be made. If there is meningitis due to disease of the cribriform plate or upper wall of orbit, we also expose and drain these parts thoroughly. Sarcoma of the ethmoid, which is not uncommon, is operated on extra-nasally (Moure, Watson-Williams).

(4) *Empyema of Sphenoidal Sinus*.—Often there are no symptoms, but there may be pain in the mastoid region and behind and between the eyes, and often there is well-marked general debility. Offensive post-nasal catarrh with crusts is usual. In all cases of obscure retrobulbar neuritis, slight optic neuritis (unilateral), meningitis, the sphenoidal sinuses should be carefully explored. Pain does not always cease after the sinus has been opened. The size of sinus varies very much, one side often overlapping the other. The posterior ethmoidal cells are also frequently involved, as they often overlap the sphenoidal sinus. They are very important because of position of the optic nerve and cavernous sinus. Optic neuritis and retrobulbar neuritis (often unilateral) are due to pressure or to perineuritis or to toxins. Central scotoma is due to congestion of retinal vein or to toxins. Meningitis and cavernous sinusitis are more frequent than disease of orbit. Often there is cerebral and extra-dural abscess and caries of the sella turcica. Paralysis of ocular muscles is frequent. The anterior and also the lower wall should be removed thoroughly, for a small opening often closes up. In most cases it is necessary to remove middle turbinate and posterior ethmoidal cells. In cases of extensive bone disease we may try to remove extra-nasally (Jansen, Moure). The existence of the semi-canal is ethmoidalis (Onodi) should be remembered. If several of the accessory sinuses are involved and the symptoms are urgent, we operate on all the cavities at once, through the maxillary antrum (Jansen)—(the maxillary antrum and sphenoidal sinus are often only separated by thin bone)—or through frontal sinus (if this is involved) by removing the lower wall, or from the front (Moure, Watson-Williams, Lowe), or each cavity may be treated separately.

SOCIETIES' PROCEEDINGS.

BRITISH MEDICAL ASSOCIATION—SECTION OF LARYNGOLOGY, OTOTOLOGY, AND RHINOLOGY.

Meeting at Birmingham, July, 1911.

MR. F. MARSH, Birmingham, *President, in the Chair.*

Discussion on the Diagnosis and Treatment of Conditions in the Accessory Nasal Sinuses giving rise to Oculo-orbital Symptoms.¹

DR. P. WATSON-WILLIAMS (Bristol): For a long period it has been my custom in private practice and in my clinic at the Bristol Royal Infirmary to refer to the ophthalmic surgeon at any rate those cases in which sphenoidal sinus and posterior cell disease is suspected, and very many ophthalmic observations have been made on maxillary and frontal sinus suppurations. Now, although contractions of the visual fields and other changes are often found and are of diagnostic value in doubtful cases, I must say that in many of the maxillary and frontal sinus cases, and not seldom in undoubted suppurations in the sphenoidal sinuses or posterior ethmoidal cells, there have been no discoverable abnormalities from the ophthalmologist's standpoint. Speaking generally, we have found that temporal visual field contraction is usually associated with sphenoidal sinus and posterior ethmoidal cell suppurations, while general visual field contraction is usually due to frontal sinuses or maxillary sinus suppuration. The early recognition of these sinus affections is of great importance: first, because the severer eye complications may be associated with the least severe and least obvious sinus cases; and secondly, because there is reason to attribute some of the most distressing psychic symptoms caused by sinus suppuration to toxic absorption, influencing the cortex through the meninges, and thus we may explain the failure to obtain from operative treatment of the sphenoidal or other sinuses the full measure of relief from fits of depression, etc. The recognition of early and latent sinus involvement is often by no means simple. I would emphasise the fact that the absence of pus is no criterion of the absence of infective sinusitis, and a clear mucous secretion may prove in bacteriological culture to be highly virulent. For the purpose of clinching a diagnosis I think the antral suction syringe and my sphenoidal sinus syringe and cannula are of great assistance. In conclusion, I beg to protest against one remark of Dr. Bronner suggesting that my osteoplastic radical operation for fronto-ethmoidal sinus suppuration is a more extensive operation than that of Killian. So far from that being so it is really simpler and easier of completion, and doing the same thing as Killian's in what I think is a better way.

MR. HERBERT TILLEY (London), speaking of his own experience, said that although many patients suffering from lesions in the optic nerve had been referred to him by his ophthalmic colleagues, it was not

¹ See p. 9.

often that he could find the cause of the eye trouble in the nasal cavities, and he had come to the conclusion that when the ocular mischief *was* due to nasal disease, the latter generally existed as some definite lesion the subjective or objective symptoms of which were fairly easy to recognise. He did not deny that obscure latent nasal disease might produce serious disease of the optic nerve, but he thought such cases were rare. With regard to vaccine treatment, he thought that it might be valuable in acute or subacute cases where a more or less pure culture was present and an autogenous vaccine was prepared, but in this connection it was to be remembered that acute cases frequently recovered without any treatment. He had had little or no success from vaccine treatment in chronic cases, and the explanation of this was probably to be found in the thickened mucous membrane and excessive subepithelial hyperplasia. These structures secreted very freely, and even if a vaccine eliminated the pyogenic elements in the secretion, still an abnormal amount of mucus was poured out, and a "cold" or mild catarrh would immediately cause reinfection of the mucosa, with a return of suppuration. In acute inflammation of the frontal sinuses he believed in irrigation with warm normal saline, to which tincture of iodine was added in the proportion of ʒj to a pint. He believed it hastened a cure, and it certainly relieved the headache. In chronic suppuration of the antrum he had returned to the canine fossa operation with a large counter-opening in the inferior meatus—the anterior half of the inferior turbinal having been removed as the first step in the operation. For twelve months he had given the intra-nasal a fair trial, but found that in some cases suppuration continued, or that excessive crust-formation occurred, and when, in a few cases, the canine fossa was eventually opened, the discharge was found to be due to pockets of diseased mucous membrane or some other pathological condition which could not be possibly dealt with by the intra-nasal method. By the canine route the surgeon laid bare the diseased sinus, and could deal effectually with it. The operation was easy, the traumatism slight, and was certainly more in accord with the general principles of surgery. He recorded an extraordinary case of chronic empyema of the right frontal sinus in a man, aged seventy-one, whose only complaint was diplopia; under the inner half of the right eyebrow was a tense fluctuating swelling, and there was a copious purulent nasal discharge from the right nostril, which was proved to be due to suppuration in the right antrum, ethmoid, frontal and sphenoidal sinuses. When the frontal sinus was opened it was found that the roof of the orbit had completely disappeared, as also had the posterior wall of the sinus, so that the dura mater covering the anterior part of the frontal lobe was exposed. The patient had never had a headache, and but for the diplopia would never have come to the hospital. With regard to osteomyelitis, his experience was that it did not occur in acute cases, but in chronic suppuration in the frontal sinus; in fact, he did not recollect ever having seen a case in acute inflammation, but had seen several fatal cases following operation for chronic suppuration. With regard to opening the sphenoidal sinus, he thought one should be specially careful to enter the sinus, and then withdraw one's hook downwards and forwards. Furthermore, he always explored the posterior ethmoidal cells because they were frequently diseased, and generally the outer half of the anterior wall of the sphenoidal sinus was closed by the posterior ethmoid cells. It could not be too often repeated that to obtain a cure of a chronic sphenoidal sinus suppuration as much of the anterior wall as was commensurate with safety should be removed in order to allow

for the intractable tendency which such an opening showed towards closing by granulation tissue.

Dr. W. S. SYME (Glasgow): The subject of the oculo-orbital complications of nasal accessory sinus disease is such a large one that I shall confine myself to some remarks on the posterior ethmoidal cells and sphenoidal sinus. Some time ago I reported a series of seventeen cases of chronic sphenoidal sinus disease in which the eyes were examined by a skilled oculist.¹ In five of these cases congestion or inflammatory changes were found in the optic discs, and in one other the disc was in a condition of atrophy. I am bound to say I was surprised to find that in such a large proportion there were pathological changes in the nerve, especially as the sphenoidal sinus disease was of a mild chronic type. In the five cases operation on the sphenoidal sinus and posterior ethmoidal cells was followed after a varying time by disappearance of the changes in the disc. These patients, it should be observed, came complaining of nasal and not of ocular symptoms. They were not aware of deterioration of vision. The explanation is probably this: Chronic sphenoidal sinusitis tends in most cases to cause, after a time, an atrophic condition in the neighbourhood of the ostium (though at first there is oedema in this region and the posterior end of middle turbinate). In this way the drainage of the sinus is facilitated, and the signs of the sinusitis to a great extent disappear, and if the changes in the lining membrane are not very marked it may also return more or less to normal. The changes in the optic disc disappear as after operation on the sinus. In the cases where this does not take place, and in which the optic nerve changes go on to cause changes in vision noticeable by the patient, the explanation given above probably accounts for the absence of signs of sphenoidal and posterior ethmoidal disease, though I am convinced that in some of these, if the sinus be opened, pathological changes would be found. The diagnosis of sphenoidal sinus disease in the more chronic forms is not easy, though there is little difficulty in the more marked cases where the purulent discharge is of large amount. There are, however, many cases of disease of this cavity where there is very little discharge, and the same holds good, one knows, though not, I think, to so large a degree, of the other accessory cavities. It is only in a small proportion of the cases that one finds crusts in the naso-pharynx. The complaint is usually of the nature of naso-pharyngeal catarrh. A little muco-pus may be seen between the middle turbinate and the septum, and if the anterior wall of the sinus can be seen it will be observed to be pale in colour. By posterior rhinoscopy there is often found atrophy of the posterior end of the inferior turbinal, with, in some cases, oedema of the posterior end of the middle turbinal, in which locality there is usually a small amount of discharge. I am referring now to the mild chronic cases, or to what might be called cases of latent sphenoidal sinusitis, though that is not, I think, a happy term in connection with any diseased process—from the diagnostic point of view at any rate. To make the diagnosis more definite a cannula may be passed into the cavity under cocaine and adrenalin, and air blown through it. A little discharge may thus be evacuated. Dr. Watson Williams's suction apparatus would probably be helpful. In many cases, however, the diagnosis can only be decided by opening the sphenoidal sinus, and examining the lining membrane carefully and in detail by sight and by means of a probe. The conditions, both pathological and anatomical, of the interior of the sinus vary very greatly. In the milder cases cedematous changes will be found in

different parts of the cavity. Common localities are the floor and the external wall, but the most common seat of these changes is the antero-external recess, and this is interesting as this part is contiguous to the optic foramen. As a rule in these chronic cases there is very little discharge. In one case, however, I found a very large sinus quite full of thick cheesy material. There was a history of post-nasal discharge of some years' duration. On posterior rhinoscopy the end of the middle turbinal was enlarged, and in this position there was a bead of yellow pus. There were no optic nerve changes in this case. Anatomically all kinds of variations in the size and relations of the sinus may be found. It may extend above, below, or behind the opposite sinus, and it may come into relationship not only with the optic foramen of its own side, but also with that of the opposite side. This, however, is of rare occurrence. It may extend below the optic foramen, and this extension may almost encircle the foramen. From this also there may exist an opening leading directly to the sheath of the optic nerve. In two skulls I have found a very marked extension of the sinus laterally, even as far out as the root of the external pterygoid process. On the other hand, the sinus may not come into relation with the optic foramen of its own side at all. In a certain proportion of skulls, though by no means in the majority, the posterior ethmoidal cell extends backwards beyond the region of the optic foramen, and in some this cell is found external to the sphenoidal sinus. In operating on the sinus these relationships should be borne in mind. The anterior wall must be completely taken away, and to effect this the middle turbinate and the posterior ethmoidal cells must be removed. The after-treatment is sometimes prolonged and difficult as granulations tend to grow rapidly, and it is necessary to keep these down so that the cavity may not close prematurely.

Dr. N. C. HARING said: The discussion will be of little use unless it clears up the question as to whether one may expect ocular lesions to occur in cases of latent sinus disease; it is freely granted by all observers that marked nasal lesions, ulcerations and pent-up pus, especially in the region of the posterior ethmoidal cells and sphenoidal sinus, may be accompanied by visual disturbances of all degrees up to amaurosis; the real point of difficulty is the matter of personal judgment of the observer, which causes one man to find sufficient evidence to diagnose a latent sinus disease, another to deny its presence. A similar difficulty occurs in the *post-mortem* room, where again very different opinions are expressed by different observers as to whether a sinus is affected by disease, or shows only such slight signs as not really to constitute a change from practical normality. A further difficulty is introduced by the apparent resemblance between the symptoms of certain cases of post-influenzal meningitis and sphenoidal sinusitis; lumbar puncture and expert examination of the withdrawn cerebro-spinal fluid has proved itself of value to me in two such cases. As regards serum tests for the presence of tuberculosis I consider all the skin reactions as liable to considerable fallacy; the method of injection of Koch's T.O.—equal dose of the human and bovine strains—has proved in my hands a reliable and safe method of diagnosis; of course it is always to be borne in mind that the positive result merely gives evidence of a tuberculous focus in the body, but does not indicate its locality unless it can be shown that a local reaction as well as the general one takes place.

Mr. B. SEYMOUR JONES (Birmingham) said: I will confine my remarks to diseases of the posterior ethmoidal, sphenoidal and antral sinuses and their causal relation to retro-bulbar neuritis, central scotoma, and con-

traction of the field of vision. It is suggested the lesion of the optic nerve is caused either by direct pressure or toxins of the bacteria absorbed through the lymph-stream; possibly there may be a reflex element. Showing that direct pressure on the nerve due to distension of cells of the posterior ethmoidal group and not toxins altogether may determine the neuritis, I will cite one case of left hemianopsia referred to me from the Eye Hospital: Male patient, aged twenty-three, came to Eye Hospital with loss of vision for the last ten days. Onset in the night: in the morning could not see with the left eye. Pain accompanied loss of vision, located round the eye and at back of orbit; incessant up to time of operation: sight was worse at night. Smokes little, 1 oz. per week. Has slight discharge from the left nostril; colour scotomata present; the right visual field was normal and the left contracted to the extent shown in the chart. There was no pus to be seen in the nose, turbinates appeared to be normal anteriorly, but there was slight œdema of posterior end of left middle turbinate. I resected the posterior end of the left middle turbinate and much bleeding resulted; operation could not be continued. The next day the field of vision enlarged considerably—this shows the beneficial result of local depletion of blood. Seventeen days later the posterior ethmoidal cells were opened with Hajek's hooks and curetted; pus and small polypi came way. Next day the patient said he could see perfectly, and the field of vision was much enlarged; four days later the field of vision returned to the normal. I look on the beneficial effect of the operation as being entirely due to relief of pressure, as a toxic effect would not disappear with such rapidity. I have had similar cases of contraction of the field of vision showing the effect of latent posterior ethmoidal and sphenoidal disease. I am inclined to regard colour scotomata as due to toxins, for Onodi has mentioned them as occurring in almost any sinus affection. I will mention one case of antrum disease which apparently gave rise to optic neuritis and colour scotomata. The patient was referred from the Eye Hospital. Optic neuritis right eye, $3\frac{1}{2}$ dioptries swelling; left eye $2\frac{1}{2}$ dioptries swelling, visual fields almost full: right vision $\frac{6}{24}$, left vision $\frac{6}{26}$ partly. Influenza six months ago, nasal discharge since. Eyes became affected four months ago: slight blurring at night time, especially after seeing bright light as train passing. Right middle turbinate is œdematous. Pus in the middle meatus, left nasal passage is normal; no pus seen in the olfactory fissures. Right antrum was found to be full of pus: intra-nasal opening made together with resection of the anterior end of the middle turbinate. Two months later right eye-vision as good as ever; left eye improved, but not so good; still under treatment. The view I take is that in a considerable number of cases the eye condition, such as contraction of field of vision, enlargement of the blind spot, and the central scotoma is caused by a latent suppuration in one or other of the sinuses, especially the posterior ethmoidal and sphenoidal, the ostia of which may be obstructed and may induce distension of the cells, in others of course there is obvious disease. It is these latent cases which require the most careful investigation. I go so far as to state I am prepared to resect the posterior end of the middle turbinate and explore the posterior sinuses of the upper series if the ophthalmologist satisfies himself there is no constitutional or toxic cause for the eye condition. Another point I should like to mention as regards the prognosis in these cases is that if they are dealt with actively soon after the onset of the affection there is no reason why the vision should not be permanently and completely restored. I have records of cases in which the sight has completely

recovered after two months' history, but have only had partial success in those cases in which the lesion has been in existence from four to six months. This conclusion shows us the urgency of an early recognition of a loss of vision and the extreme importance of a consultation between an ophthalmologist and the rhinologist in those cases of obscure origin, with an advocacy of early endo-nasal treatment whether there is a manifest affection of the sinuses or a latent one.

Dr. W. JOBSON HORNE (London) stated that in years gone by when he had the opportunities of investigating in the *post-mortem* room the conditions of the nasal accessory sinuses of all subjects, whether they had died from alleged accessory sinus disease or not, he had come to the conclusion that sphenoidal sinus disease was more often diagnosed than it existed. Nevertheless the contingency of its existence was not to be ignored. He fully agreed with the speaker who said that vaccine treatment was only of service in recent cases with a pure infection, and in which an auto-genous vaccine was obtainable. Those cases, in his experience, could be cured without a vaccine. On anatomical and surgical grounds he urged a careful investigation of the large posterior ethmoidal cell, the opening of which was in juxtaposition to that of the sphenoidal sinus, before arriving at a diagnosis of disease in the latter cavity, and before exposing that cavity to the possibility of infection from the ethmoidal cell.

Dr. WALLIS (Shrewsbury): In the speaker's experience fully 90 per cent. of cases of all sinus trouble showed some visual field anomaly. In the vast majority of cases peripheral contraction alone is present. Central scotoma only occurs rarely either in acute sinus suppurations or in those cases showing acute ocular symptoms. Fields are normal in non-sinus affections of the nose. The only sinus inflammations not showing field changes are thick-walled sinuses of young children and mucocoeles. General contraction most markedly occurs in the anterior group of sinuses and temporal contraction in the posterior group, and particularly bi-temporal. Bi-temporal hemianopsia in absence of acromegaly is characteristic. Ring scotoma, an uncommon symptom at any time, occurs in sphenoidal sinusitis. These observations are not in agreement with many speakers to-day, but have been made on patients who came to a clinic of rhinology (Dr. Watson Williams's) for nasal affections, and I think if field anomalies be looked for as a routine they will be found.

Dr. DAN MCKENZIE (London) suggested that in spite of the apparent conflict of opinion regarding "latent" or "manifest" sinus disease all would agree that in any given case of eye disease referred for their opinion to rhinologists, the only way to be sure was to expose and puncture or wash out the suspected sinus or sinuses. He advised caution in the use of the various tests for tuberculosis; they were of more value when negative than when positive, except in the case of children.

Dr. BROWN KELLY (Glasgow) pointed out that in infants an affection was rarely met with—he had had three cases—in which there was a discharge of pus from the eye and corresponding nostril, swelling of the cheek, and premature eruption of a molar. Such cases had been usually reported as due to suppuration in the antrum, but the disease was really osteomyelitis of the superior maxilla. In adults one occasionally saw great swelling of the cheek and eyelids, causing the eye to be closed, with the history of a recent attack of toothache or an extraction badly performed, the tooth, perhaps, having been forced up into the antrum. Under the circumstances one naturally suspected an antral infection, but

on investigation it would be found that the underlying disease was periostitis of the superior maxilla. The speaker had seen several cases in which very marked eye symptoms, especially proptosis, were caused by pus in the posterior ethmoidal cells. He had also obtained improvement in vision after opening these cells, though no pus had been found. Optic atrophy, associated with nasal disease he had also met with. His experience, however, resembled Dr. Tilley's, in that he had examined many cases referred by ophthalmologists, but had found accessory cavity disease in only a very small proportion. The suction syringe recommended by Dr. Watson Williams recalled an old method of diagnosis. Moritz Schmidt, over twenty years ago, introduced a Pravaz's syringe, fitted with a sharp curved steel needle. With this he aspirated the antrum from the inferior meatus. Subsequently the speaker had the syringe adapted for the other accessory cavities. Schmidt's syringe fell into disuse after the introduction of Lichtwitz's trocar and cannula.

Mr. H. J. DAVIS (London) gathered from Dr. Wallis's remarks that in 90 per cent. of all cases of sphenoidal sinus disease some contraction of the visual fields existed. If this were so, the explanation of its apparent infrequency must be that patients were unaware of any ocular defect themselves. Considering how close the ocular nerves were to the sinuses he thought that ocular symptoms were not so frequent as one would expect. He quite agreed with what Mr. Tilley had said, and his experience coincided with it.

Mr. H. H. B. CUNNINGHAM (Belfast) drew attention to the ocular symptoms, often slight, due to nasal trouble—symptoms such as asthenopia, which have not yielded to treatment directed towards those symptoms in the first instance, *i.e.* prescription of glasses; others such as amblyopia which has been found to be toxic in nature, and in which the source of the toxicity is not quite usual or quite evident, *i.e.* tobacco, gastric disturbances. In these cases, he said, often an enlarged turbinal can be found pressing on the septum or on a neighbouring turbinal, or even an infection of the anterior ethmoidal cells. Treatment of the nasal trouble in these cases has resulted in relief of the ocular symptoms. With reference to plugging the nose after nasal operation, he wished to bear out Dr. Brommer's remark about the minimum amount of plugging; he has quite given it up, and found hydrogen peroxide will always stop hæmorrhage, besides keeping the nose aseptic, and further, patients themselves say they feel much clearer, and great relief from their symptoms, such as headache, very shortly after operation, when hydrogen peroxide is used instead of plugging.

Dr. PEGLER recalled a case of latent antrum suppuration with an unusual ocular symptom occurring in his practice which he thought was worth reporting. The patient was a young lady who had been sent by her singing mistress for huskiness and voice fatigue, and there was also a complaint of constant sore throats. Examination of the nasal cavities showed a very small flake of pus in the left middle turbinal region, and then on inquiry the patient admitted that she was conscious of matterly stuff finding its way into the nose and down the throat occasionally on stooping forward. When questioned as to pain, the lady said that for some time past she had had a feeling "as of being able to draw air up to the left eye through the nose," and of some pain around the orbit. The history was that six years previously she had visited a dentist for the extraction of a left upper molar, and had experienced a very bad gas anæsthesia with much subsequent bleeding from the gum. At the time of consultation, however, no trace of the stump remained. An explora-

tion of the maxillary antrum by Lichtwitz's trocar resulted in the washing out of a quantity of pus. The subsequent treatment was exclusively intra-nasal, and after the establishment of a permanent hole in the outer nasal wall for the patient to catheterise the central cavity herself the pus was gradually got rid of. The eye symptom, which was somewhat an uncommon one in the author's experience, disappeared early in the treatment.

The PRESIDENT (Mr. MARSH) (Birmingham), in summing up the discussion, said they were all agreed that any obvious lesion in the nasal cavities associated with ocular symptoms should at once be dealt with by operation. The rock speakers were inclined to split upon was the question of the degree of exploration that was necessary or advisable in cases where no obvious nasal lesion was present, and when treatment other than nasal had failed to relieve. From some of the cases related it would seem advisable to resect the middle turbinated body so as to expose the posterior ethmoid cells and the sphenoidal sinus, and to unmask any possible latent cause in these regions. The possible great and not infrequent departure from the normal, shown in the beautiful series of plates by Prof. Onodi, emphasised the need of special care in operating. He had seen one case not in his own practice of complete blindness following curetting of the ethmoid cells, and knew of another case, neither of which had been published. There had been but little dissent from the statements that vaccine treatment was of supplementary use only, and that tuberculin tests were not of much diagnostic value in these cases. He cordially thanked the openers of the discussion, which had been of more than usual interest, and Prof. Onodi for leaving at the disposal of the President the valuable series of plates he had brought to illustrate his remarks.

ROYAL SOCIETY OF MEDICINE—OTOLOGICAL SECTION.

October 20, 1911.

DR. W. MILLIGAN, *President of the Section, in the Chair.*

PRESIDENTIAL ADDRESS.

Modern Developments in Aural Surgery and the Present Position of Otology in the Medical Curriculum.

Much of the recent progress in otology, both in this country and abroad, has been due to advances in bacteriology, to more accurate pathological research, and to improvements in surgical technique. Another factor, which to my mind at any rate has done much to mark progress and to elevate the position of otology in the medical landscape, has been the more intelligent and generous provision by hospital boards, both lay and medical, of facilities for the adequate treatment of persons suffering from diseases of the organs of hearing. The day has passed when the aural clinic is relegated to the tender mercies of the most recently appointed member of the surgical staff, a gentleman whose

interests in all probability ran in quite different grooves, and whose absence from the clinic was more frequent than his presence. Nor, again, are unintelligent and mischievous regulations, such as that the aural surgeon must confine his attentions to out-patients and to the outside of the skull-cap, framed by intelligent medical boards of the present day. Encouragement, rather than discouragement, is now meted out to the *Chef de Clinique*, and opportunities are afforded to him to persevere in his endeavours to add some quatum to the sum of human knowledge of diseases of the ear.

To a large extent this gradual evolution of our speciality, slow as it has been in this country, has been forced on by the unalterable law of demand and supply. The public have clamoured for a more rational and scientific treatment of diseases of the ear, and the more enlightened hospital boards throughout the country have grasped the situation and have appointed specially qualified officers to take charge of special aural clinics. But if the position of the aural clinic and of its appointed officer is more satisfactory, is it so also with the position of the medical student?

To-day more than ever do we require efficient and properly trained aurists to deal with the vast numbers of school children who are being examined under the Medical Examination of School Children's Act. Have the majority of the medical inspectors the necessary qualifications to adequately and thoroughly discharge this onerous duty—a duty to the individual as well as a duty to the State? Have our universities and teaching schools foreseen what was coming, and if they have, what have they done to assist in the matter? The most generous critic of our university system must, I fear, admit that *adequate* legislation relative to the teaching of otology has been practically *nil*, and also that hundreds of graduates are turned out year after year by the medical mill with a most rudimentary knowledge, if knowledge at all, of the principles and practice of aural surgery.

When President of the Otological Section of the British Medical Association in 1902 I ventured to try to stir up enthusiasm in this matter by suggesting that in the interests of patients suffering from exanthematous diseases, one of the most prolific sources of ear disease, applicants for resident posts in fever hospitals should be required to produce evidence of their having attended a course upon diseases of the ear and of their having some practical acquaintance with the subject. On another occasion, in order to endeavour to encourage interest in otology and to make sure that the young specialist's knowledge was the result of genuine work, both practical and theoretical, and not merely the outcome of a few months' visit to the chief Continental clinics, I suggested that the various British universities should so arrange matters as to allow any candidate who so desired it to proceed to an honours degree in otology, evidence being forthcoming of his having had both theoretical and practical instruction over a given period.

Both suggestions fell upon academic ears too deaf to receive any mental impression, and so far we are to-day practically as we were ten years ago. But a time has come when it appears to me that we, as a Society of British Otologists, should be up and doing, and should make representations to the universities and teaching bodies throughout the country that in our opinion the attendance of the medical student for a portion of the day for from three to six months at a recognised aural clinic should be made *compulsory*.

So far as I have been able to ascertain not one of the universities of

the United Kingdom insists upon its students having a practical and theoretical acquaintance with otology prior to qualification, while the only London Medical School which insists upon its students attending its aural clinic is the London Hospital.

A step such as this, *i. e.* making otology a compulsory subject in the curriculum—the thin end of the wedge, no doubt—would within a few years be productive of much good and would ensure for the public a more rational and intelligent treatment of diseases of the ear than exists at present in many parts of the country.

Three Cases of Chronic Suppurative Otitis Media.

By W. MILLIGAN, M.D.

CASE 1: *Localised Erosion of External Semicircular Canal; Operation; Recovery.*—J. K—, male, aged twenty-five, was admitted to hospital on March 15, 1911, on account of chronic left-sided suppurative middle-ear disease and frequent attacks of vertigo. *Right ear:* Operated upon three years previously for mastoid disease and sinus thrombosis. *Left ear:* Large perforation, foetid discharge. *Cochlea:* Ordinary conversation fairly well heard; high and low tuning-forks lateralised to left ear. *Right internal ear:* Functionless. *Vestibulo-canalicular system:* No spontaneous nystagmus, but fistula symptom well marked even on pressing tragus inwards. *Caloric tests:* Right, no reaction; left, forty seconds; Rombergism, +.

Operation: Mastoid opened; cholesteatoma present; large fistula in external canal. Toilet of affected area.

After operation: Good progress; slight improvement in hearing; pulse remained very slow (48-60) for a week, and then became normal. Discharged April 7, 1911.

September 18, 1911: Ear dry and completely healed; no vertigo; hearing slightly better than before operation.

CASE 2: *Large Erosion of External Semicircular Canal; Operation; Recovery.*—A. L—, male, aged thirty-five, was admitted to hospital on April 25, 1911, with history of suppuration from right ear of ten years' duration; recently occasional attacks of severe vertigo. Temperature, 98.2° F.; pulse, 74; respirations, 16-18.

Right ear: Large perforation of membrane, scanty foetid discharge; no mastoid tenderness. *Cochlea:* Hearing power, $\frac{1}{60}$; tuning forks lateralised to right ear. *Vestibulo-canalicular system:* Spontaneous nystagmus, quick movement directed away from lesion. *Caloric reactions:* Nystagmus increased with either hot or cold syringing, most marked with cold; induction period, forty-five seconds. Well-marked fistula-symptom, but not produced on pressure over tragus. Rombergism marked—with eyes shut and feet together falls to right side.

Operation: Antrum opened; bone sclerosed; cholesteatoma found; large fistula in external canal. Toilet of part. Patient discharged May 22, 1911.

August 24: Ear quite dry, no vertigo or other discomfort.

CASE 3: *Erosion of External Semicircular Canal; Labyrinthitis (?)*—J. F—, male, aged seventeen, was admitted to hospital on September 15, 1911. Left-sided suppurative middle-ear disease of fifteen years' duration. Three weeks before admission began to have frequent attacks of vertigo accompanied by vomiting, quite irrespective of the ingestion of

food. Temperature 99.8° F.; pulse, 80; respirations, 18. *Ear*: Left meatus entirely blocked with granulation-tissue; foetid discharge; slight mastoid tenderness, but no oedema. *Cochlea*: Watch not heard, loud conversation just heard. Low-toned tuning-forks just heard in left ear, but referred to right side; high-toned forks referred to and heard in right ear. *Vestibulo-canalicular system*: Spontaneous nystagmus present, quick movement directed away from lesion; no fistula nystagmus. *Caloric reactions*: No definite reaction with either hot or cold water (nullified by presence of granulation-tissue?). *Gait*: Patient steady on his feet when walking or when standing with feet together and eyes closed. On attempting to stand with eyes closed and upon one leg, falls over to left (affected) side. Knee-jerks markedly increased; no ankle-clonus; no Babinski or Kernig's sign. Urine normal.

Operation: Complete post-aural operation performed. Large fistula in external canal surrounded by an area of apparently necrosed bone. No pus seen to exude. Discoloured bone removed with fine burr, but membranous canal not opened. General toilet of infected area.

Progress since operation good, although nystagmus more marked. Should expectant treatment be continued, or should the labyrinth be extirpated?

Mr. A. CHEATLE asked where the erosion was in each of the cases, if the President could localise it.

Dr. DAN MCKENZIE remarked that Dr. Alexander had drawn attention to this particular class of case in several articles which he had recently published.¹ He regarded the first two cases as obvious instances of localised labyrinthitis, which had been cured by the radical mastoid operation. The mastoid operation could be depended upon in most cases to cure labyrinth disease of this type. The third case of this series was one which occupied a more doubtful position. In such cases Alexander relied upon the conditions subsequent to operation for guidance as to whether a labyrinth should be opened, and the symptoms upon which he laid most stress were the continuance of the vertigo, the presence of pain, discharge, and headache, particularly occipital headache. If such symptoms were present he did not defer operation on the labyrinth.

Mr. RICHARD LAKE remarked that if there was only nystagmus and no giddiness or vertigo he could not see that there was any object in proceeding further.

Dr. DUNDAS GRANT said he had under his care a case in which there was very marked nystagmus, with distinct labyrinth disturbance, before the operation, and after the operation, as in the President's case, the nystagmus was if anything more marked for a time than before. That was not altogether unexpected. The patient was kept in bed, and the nystagmus diminished to some degree. At present it had almost disappeared, the patient had no giddiness, and was infinitely better than before the operation, in spite of the fact that the subsequent course of the radical operation as such was not all that could have been wished; that is, the patient was withdrawn from his care, and a considerable amount of narrowing took place in the passage, amounting to almost complete occlusion. Not much time had elapsed since the operation in the President's case, and he did not think that the nystagmus rendered it necessary, in the absence of other symptoms, to do a further operation.

Mr. H. E. JONES had seen three or four cases of the kind in which,

¹ *Archiv. f. Ohrenheilkunde*. See JOURNAL OF LARYNGOLOGY, RHINOLOGY, AND OTOTOLOGY, vol. xxv, p. 451, and vol. xxvi, p. 556.

without further operation, good recovery ultimately took place, with good function.

Mr. SYDNEY SCOTT, speaking from the operative point of view, in the first two cases would have done as the President had done. As to the third case, he would like to know the meaning of the term "apparently necrosed bone." If at the time of the first operation necrosed bone was found, and also absence of vestibular reactions in the labyrinth had been noted, he would have proceeded further and operated on the labyrinth straight away. If in the present state of the patient there were persistent granulations he would still operate on the labyrinth. Otherwise, if the cavity was healed and dry, in spite of the nystagmus he would not now touch the labyrinth.

The PRESIDENT (Dr. W. MILLIGAN), in reply, said his wish had been to elicit from any member a hint as to whether one ought to simply watch and follow out expectant treatment in Case 3, or whether something more ought to be done. In reply to Mr. Cheate's question, the erosion in all the three cases was on the external canal and towards the posterior limb of that canal. With regard to the remarks upon Case 3, he felt indebted to those who had spoken. His own feeling had been to leave the patient alone, and he had not done anything further up to the present. The patient had no headache or sickness, but he had unquestionably developed more nystagmus since the operation. As, however, his general condition did not seem to be getting worse, he had left him alone. In answer to Mr. Scott as to the meaning of the term "apparently necrosed," the condition of the bone when the radical mastoid operation was performed was that the bone round the fistula was discoloured, being almost black. The appearance of the wound was now quite good. There were no granulations, and, taking into consideration what had been said, he proposed to continue expectant treatment.

Temporo-sphenoidal Abscess following Chronic Suppurative Otitis Media; Operation; Recovery.

BY W. MILLIGAN, M.D.

Patient, male, aged twenty-eight. History of prolonged suppuration from right middle ear; severe headache of a few days' duration. Right membrane perforated, posterior superior segment; fetid discharge. Tenderness over antrum, but not over temporo-sphenoidal or cerebellar area. Pulse, 90; temperature, 102° F.; respirations, 16. Eye: Suspicion of ptosis upon right side; no nystagmus; no neuritis. Reflexes: Knee-jerks active, ankle-clonus present; Babinski upon left side. Urine normal. Cerebro-spinal fluid cloudy, albumen lightly increased; polymorphonuclears increased; no organisms. After admission, temperature gradually dropped to normal; pulse became very slow (44) and respirations 14; rapidly increasing mental hebetude.

Operation: Antrum opened; cholesteatoma found. Base of temporo-sphenoidal lobe exposed; dura covered with granulations. Incision into temporo-sphenoidal lobe; abscess found and about 2 oz. of pus evacuated. Abscess drained by insertion of one tube through roof of antrum and another through the squama. Pus in abscess showed Gram-diplococci.

Discharged five weeks after operation.

Mr. WAGGETT desired to ask a question in regard to technique—*i. e.*

as to drainage. He had just operated upon a case in which there was a very large temporo-sphenoidal abscess containing 3 oz. of pus. At the instigation of a colleague he removed the drainage-tube at the end of two days, there being no further discharge. Up to the present, some fourteen days after operation, the result has been excellent.

Mr. C. A. BALLANCE said that for an abscess in any part of the body containing 2 oz. or 3 oz. of pus, he thought it would be wise to leave the drainage-tube in a longer time. In brain abscess he generally used a couple of drainage-tubes, removing one in five days, and taking out the other a little later. Much depended on the nature of the particular case, and he did not so much take the tubes out as let them come out of themselves. As the liquid brain-tissue closed round the cavity the tube came out. He had had to reintroduce a tube on several occasions, and for that reason he was very careful not to take tubes out too early.

Mr. HERBERT TILLEY asked whether the question of the retention of the tube did not largely depend on whether the abscess was acute or chronic. If chronic, the tube must be left in much longer, because the capsule was not elastic. In an acute abscess, even at the time of operating, the tube was liable to be pressed out by the contraction of the surrounding brain-substance, and hence the tube could be removed more quickly than from a chronic case, in which one had to allow for the contraction of the capsule.

Dr. URBAN PRITCHARD said the procedure as to drainage depended also on the depth of the abscess. He was reminded of a case in which there were two abscesses. One was opened, and the other could not be found until some days afterwards, when it was opened into by a pair of forceps. A drainage-tube had to be inserted deeply, and it would not have done to have removed the tube in two days. This case occurred fifteen years ago, and the patient was now absolutely well.

Mr. A. L. WHITEHEAD thought one could scarcely keep a tube in too long in chronic cases. In acute cases drainage for a shorter time sufficed. In large abscesses he put in two tubes, side by side, and kept one tube *in situ* as long as there was any discharge of breaking-down brain-substance. In chronic cases it was his custom to wait for the tube to be pushed out by granulation-tissue.

The PRESIDENT replied that one tube in this case was inserted through the roof of the antrum, and the other through the squamous portion of the temporal bone, so that there was established through drainage. Much had been said about the desirability of allowing the tube to be extruded by granulation-tissue forming behind it. He had never felt justified in removing a tube so early as on the second day, but, as Mr. Tilley said, much depended on whether the abscess was acute or chronic. It was his practice to drain chronic abscesses by means of tubes, and acute abscesses with gauze.

Temporo-sphenoidal Abscess following Chronic Suppurative Otitis Media; Operation; Death.

By W. MILLIGAN, M.D.

PATIENT, male, aged twenty-one, admitted to hospital in semi-unconscious state; roused with great difficulty; unable to answer questions. Left meatus full of pus; perforation of posterior segment of membrane;

no granulations; definite pain over antrum. Temperature, 99.4 F.; pulse, 58; respirations, 18. Head slightly retracted, obvious pain on moving it. Eye: No neuritis, ptosis, or nystagmus; slight convergent squint. Reflexes: Knee-jerks increased; no ankle-clonus, no Kernig's sign; right Babinski. Cerebro-spinal fluid under pressure, milky in appearance; increase of polymorphonuclears; no bacteria. Albumen 0.16 per cent.

Diagnosis: Intra-cranial abscess (temporo-sphenoidal or cerebellar?) with meningitis. Complete post-aural operation. Temporo-sphenoidal lobe opened; abscess found and drained; pus in abscess contained large numbers of Gram-diplococci (*Diplococcus catarrhalis*); no streptococci or staphylococci.

After operation: No marked improvement; pulse irregular, between 48 and 60; temperature, 99°-100° F.; mental condition bad. Another lumbar puncture performed; fluid much as before, slightly more coloured; no bacteria. Cerebellum explored through posterior antral wall; no pus found. As signs of meningitis increased, repeated lumbar punctures were performed every thirty-six hours, and amount of albumen estimated. First puncture, 0.16 per cent.; second puncture, 0.16 per cent.; third puncture, 0.17 per cent.; fourth puncture, 0.18 per cent.; fifth puncture, 0.2 per cent. Urotropine given internally. Condition of patient worse. Temperature higher; pulse varying from 48 to 72. A week later patient improved greatly, able to move head without pain; retraction passed off; mental condition also improved. Ten days later marked relapse; spinal puncture, however, showed marked improvement in cerebro-spinal fluid; clear, no organisms. Blood-smears showed good leucocytosis; condition rapidly worse; delirium followed by Cheyne-Stokes' respiration and death.

Post-mortem: Abscess in temporo-sphenoidal lobe dry and well drained; no abscess in cerebellum; basal meningitis (middle fossa); temporo-sphenoidal lobe enlarged, soft, semi-purulent. Spinal meninges not examined.

Dr. DUNDAS GRANT remarked that there was evidence in this case, from the anterior history, that meningitis, if not actually present at the time when the President first saw the case, was already threatening. The fact that the temperature was above the normal was probably due to meningitis commencing and neutralising the tendency of the cerebral abscess to lead to a subnormal temperature.

A Specimen of Malformation of the Bony External Semi-Circular Canal, with Photograph.

By ARTHUR H. CHEATLE, F.R.C.S.

The right temporal bone of a woman, aged sixty-one, who died of melancholia, carcinoma uteri and broncho-pneumonia. The external bony canal is represented by a large smooth-walled cavity opening widely into the outer wall of the vestibule. A small nipple-shaped mass of bone projects from the posterior part of the sloping roof. As the deformity was only discovered after drying and cutting, no report could be made of the condition of the membranous canal. The left bone is normal.

Mr. JENKINS said this was a type of congenital deformity which one would expect to occur when one considered the development of these

canals, which are formed as grooves from the original sac and converted into canals by the fusion of projections from the sides of the groove.



The right temporal bone of a woman, aged sixty-one, with malformation of the bony external semicircular canal.

An Electric Auriscope.

By P. MACLEOD YEARSLEY, F.R.C.S.

Mr. YEARSLEY said that probably all had experienced sometimes the difficulties of looking at cases where there was not much light available, where the patient was in bed, and one could not get a good reflected light. Recently Dr. Kerr Love showed him an electric auriscope which he had obtained from New York, and which he had used for two years, both for outdoor practice and in the examination of the ears of children. It had given Dr. Love great satisfaction during that time, and Mr. Yearsley liked it so much that he had now got one for his own use. It was not by any means a toy. It could be run by a small "ever-ready battery." It consisted of a chamber containing a lamp, which was switched on by means of a collar on the handle. There were three sizes of specula which could be fitted in, and a very good view of the membrane could be obtained. Attached was a small lens for magnification, and an arrangement which converted it into a Siegel's speculum. With a shorter speculum and a smaller chamber it might perhaps be used for small operations, such as incising the membrane.

Holmes's Electric Naso-pharyngoscope.

By P. MACLEOD YEARSLEY, F.R.C.S.

This was the instrument described by Holmes in the *Annals of Otology, Rhinology, and Laryngology*. It appeared like a Hayes's laryngoscope, but it was passed through the nose after the fashion of an Eustachian catheter. It moved round in a collar, and was made on the principle of a female cystoscope. It produced magnification, and gave a very good view of the naso-pharynx. According to Holmes, in a small percentage of cases one could also see the opening of the sphenoidal sinus. Mr. Yearsley regarded it as a valuable instrument, and he had tried it on a number of patients. Very little practice enabled one to recognise the anatomical points in the post-nasal space with great clearness.

Mr. WAGGETT suggested that the operating ear speculum (which was made with the same excellent lens-lamp) was the more valuable instrument, inasmuch as a speculum for use away from the consulting room was usually required for myringotomy. The handle was shorter and thus gave less leverage.

Dr. DUNDAS GRANT considered that the weakest point about the instrument was the long handle, and if it could be made without that, or in such a manner that the handle would not get in the way, it would be better, because the long handle gave such an enormous leverage to the speculum on the walls of the meatus. For examining school-children, for instance, it would require more delicacy and gentleness than most people possessed in order to prevent the patient from complaining.

Fluctuating Swelling over Tip of Mastoid and Parotid [Region on Right Side in a Case of Chronic Mastoid Disease.

By HUNTER TOD, F.R.C.S.

Male, aged forty-eight. Admitted to London Hospital under a surgical colleague in February, 1903, with chronic middle-ear suppuration and facial paralysis on right side. Schwartze's operation was performed. In October, 1904, the patient came under my care suffering from severe headache, middle-ear suppuration, and a polypus blocking the auditory canal. The complete mastoid operation was performed; there was extensive disease, chiefly involving the tip of the mastoid process and the floor of the auditory canal. The lower portion of the lateral sinus and bulb of the jugular vein were exposed, the walls of which appeared to be healthy. Healing took place rapidly except over the floor of the tympanic cavity. The patient was discharged as an out-patient, but was readmitted again in February, 1905, having two sinuses leading down from the old scar towards the tip of the mastoid. The posterior wound was re-opened and explored, and the bone forming the margins of the jugular fossa, which was necrotic, was removed. The wall of the jugular bulb was perforated, and on enlarging the opening the sinus wall was found to be thickened, and the bulb to be full of granulations. An incision was made along the sinus posteriorly, until bleeding took place, when the plug of gauze was inserted between the sinus wall and the bone, which arrested the bleeding. The patient did well, and was discharged from the hospital, apparently quite healed.

He came up again to the hospital on October 3, 1911, complaining of much pain in the right ear, and a lump which began beneath and behind the ear, and had been gradually increasing in size for the last two or three years. In addition to the fluctuating swelling over the parotid region, the auditory canal is now filled with a large polypus, the pedicle of which is attached to the inferior and posterior part of the canal. Behind the ear is a small sinus from which there is a little purulent discharge.

Apart from this fluctuating swelling the case is of interest on account of the thrombosis, which obviously took place within the jugular bulb six years ago, and which was accidentally discovered at the operation performed in 1905. During no period were there any symptoms of thrombosis, and the temperature throughout remained normal.

Mr. R. LAKE said he regarded it as a parotid tumour, but he was not prepared to specify of what kind. It was probably semi-cartilaginous.

Mr. D. L. SEWELL said he had had very little experience of such tumours, but he thought that the two conditions were not connected with each other, and had arisen independently.

Mr. HERBERT TILLEY remarked that on the previous day he saw a case identical with this, and he agreed with Mr. Sewell that the condition of the ears had nothing to do with the tumour.

Mr. SYDNEY SCOTT said that, whether the two conditions were connected with each other or not, he thought it was important to regard them as separate until an exploration had been made, on account of the risk of infection.

Mr. YEARSLEY said the case reminded him of one which proved to be a dermoid growing under the ear. It fluctuated in size and had a small sinus discharging. He showed the specimen before the Section two years ago, and during the meeting it unaccountably disappeared.

Dr. URBAN PRITCHARD asked if it was a fact that the condition had been noticed only for two or three years, or if, as the patient insisted, it had been coming on for six years, *i. e.* soon after operation.

Dr. DUNDAS GRANT said the first thing to do, in his opinion, was to get the ear into as aseptic a condition as possible; and next, to make an exploratory puncture or incision, if necessary, into the swelling.

Mr. HUNTER TOD, in reply, said the swelling had lasted two or three years. He was not certain as to the diagnosis, and he had not removed any portion of the polypus for examination, as he wished the members of the Section to see the case first. Neither could he say whether the swelling was directly connected with the ear or not, but his impression was that the swelling fluctuated, was probably the result of the former ear trouble, and might be a chronic septic affection of the parotid gland. He did not think it was malignant. The chief object in bringing the case before the Society was for opinions with regard to treatment. He proposed to explore the mastoid region and then act accordingly.

Absolute Unilateral Deafness in Children.

By RICHARD LAKE, F.R.C.S.

CASE I.—A lad was sent up to me for examination, as an impression had been formed that his hearing was not as good as it should be.

During the course of an interview with the parents it appeared that he had passed the physical examination necessary for his admission into one of the Services, but having failed, I presume, in the Arts examination, he was then to be prepared for the sister Service. He proved to be entirely deaf on one side both on osseous and aerial conduction, but he had the extraordinary compensatory development of his sound ear that, however firmly it was closed by means of the finger, he was able to repeat sentences at a distance of 14 ft. or 15 ft. When, however, Bárány's noise producer was used one found that he could not hear a loud voice absolutely against the ear. Now, such a compensatory development of his good ear could not have been obtained in a short space of time, and the aural lesion must have existed since earliest infancy.

CASE 2.—A child, aged four and a half, more than usually intelligent. This child had been sent up to me the year before, because it had been noticed that she was deaf. There existed the barest trace of adenoids, and I did not consider that their removal would be beneficial. On the second visit one found that the child's intelligence was sufficiently developed to be able to proceed carefully with a series of auditory tests, and that she was also mon-aural. I was also informed that at the child's birth considerable difficulty had been experienced, and that forceps had been applied, and it was thought that there had been some facial paralysis on one side, but on which it did not appear to be quite clear.

CASE 3.—Recently I have seen a third case, occurring in a girl, aged seven. There is no history at all of any injury or illness which could account for the condition. The child is not at all noticeably deaf, except in a noise, when she then employs her good ear, which is the right one. Most careful testing shows conclusively that the left ear is entirely useless, and there is only a suspicion that certain tuning-forks are heard on the mastoid on that side. Those are the low-pitched tuning forks, chiefly A, and even these I am not certain of. I inquired particularly from the mother for any particulars as to difficulty at the confinement, but it appeared that the labour was premature, and delivery extremely easy, and the child, though not strong, is well grown and very intelligent. This child, like the others, if she occludes her good ear, or if her good ear is excluded for her by the finger, can hear conversation easily the whole length of the room.

Now the question comes, had the instrumental delivery any direct bearing on the result in the second case. It seems to me that this is quite possible, and that a distinct lesion of the cerebral cortex might have been caused either by direct injury or by intra-cranial effusion of blood in the temporo-sphenoidal lobe. In none of these children was there any history of illness, nor was there any sign of deficiency in intellectual development, and there was no paralysis or paresis of any other part as far as could be detected.

In these cases I am, therefore, quite at a loss to account for the condition, but it must be extremely probable that this is due either to intra-uterine disease, or to want of development of the cochlea, and the only means of elucidating the difficulty will be if chance places a *post-mortem* at our disposal.

The PRESIDENT said these cases opened up a considerable number of problems. In reference to the first case, in which Mr. Lake said his consulting room was 15 ft. long, a very useful method of increasing the hearing distance had been pointed out to him a year ago by Professor Kahn. He had a small room, and by turning his back to the patient when testing

he estimated that he increased the actual hearing distance by one third ; and if he turned the patient's deaf ear towards the wall and he himself stood with his back to the patient the actual distance was increased by two thirds. He (the President) did not know whether that was scientifically correct, but it occurred to him as a very ingenious observation. With regard to the second case, a very interesting problem arose as to whether injury at birth had anything to do with it. He would like to know whether Mr. Lake had tried the caloric test in this case, because if he could exclude the vestibule from taking part in the trouble there would be much to be said in favour of the view that there had been an injury which had a causal effect. Possibly there was some degeneration of the cortical cells in the hearing centre affecting the cochlear branch of the nerve.

Dr. DUNDAS GRANT said he did not think it possible for a lesion of the cerebral cortex to produce complete deafness on the opposite side, because there was so much interlacing of the fibres going from one labyrinth through the auditory nerve to the cortex on both sides. Thus complete deafness could only be produced when the auditory cortical centres on both sides were destroyed. He therefore regarded it as very probable that there had been a want of development or a malformation in the labyrinth in both these cases. With regard to Bárány's "noise-producer," his opinion was that it overdid what was required of it ; it might produce apparently complete deafness when the deafness was not really complete. On the other hand, if the patient heard in spite of Bárány's noise-producer, one might give the patient credit for that amount of hearing, and possibly a little more, and therefore the instrument was of value.

Mr. SYDNEY SCOTT asked whether Mr. Lake had had Wassermann's test done in any of his interesting series of cases. He had a patient, a boy, whose deafness had been attributed to adenoids. A careful examination, however, showed that he was absolutely deaf in one ear, and very slightly deaf in the other. The result of applying the caloric and rotation tests was negative on each side. The reactions indicated that both vestibular organs and one cochlea were defunct, so that he had only one cochlea left. Wassermann's reaction was definitely positive. He wondered if any of Mr. Lake's cases were similar to this.

Mr. LAKE, in answer to the President's question, said he feared he had not a good opinion of the value of the tests, and was waiting for someone to show him their real value. With regard to the question of the cerebral cortex, in reference to Case 2, he used the term in a vague way. He meant injury to the brain as being a possible explanation. He had not done the Wassermann test in any of the cases, and did not think any of them showed signs of syphilis.

A Note upon the Treatment of Cholesteatoma.

By RICHARD LAKE, F.R.C.S.

The essential to be aimed at in the cure of the above condition being to obtain absolute dryness, it became necessary to consider carefully whether treatment with alcohol is calculated to obtain such a result. The reasons which militated against this form of treatment are that in the first place alcohol rarely of itself, however carefully applied, obtains a cure ; and the second is that alcohol evaporates less readily than it absorbs water, and that unless the alcohol be absolutely absolute, or as nearly so

as can be commercially obtained, it contains already a certain amount of water, which must be left behind were it possible that the alcohol were entirely evaporated. It seemed necessary, therefore, to seek further. The only fluid which apparently fulfilled the requirement was ether, and after some years of trial ether has in my hands apparently acted in the way in which it was hoped it would. Ether, like alcohol, causes a certain amount of local discomfort, but the burning and pain are less in intensity and more evanescent. The method of applying ether is to take a probe armed with cotton-wool saturated with ether, and to well swab out the disease area. When this is done by the medical man himself very rapid drying can be obtained by gently blowing into the ear with a rubber bag (Politzer's). The patients themselves can easily carry out this treatment, but they should be seen at intervals for the surgeon to remove any dry fragments of the mass which have not come away on the swabs.

Case of Sarcoma of the External Ear.

By RICHARD LAKE, F.R.C.S.

This patient, a sailor, aged seventy-one, came to the hospital complaining of a growth on the right external ear; it had been present for four months, having started as a small pimple. It had been rapidly increasing in size; for the last two months there had been frequent and severe hæmorrhages. There was no pain. On examination the growth was found to be springing from the upper part of the auricle, and had not extended into the external auditory meatus. There was no glandular involvement. The growth was found on microscopical examination to be a mixed spindle and round-celled sarcoma. The growth was removed, the wound healing by first intention.

There was a history of injury dating back seven years, at which time the patient was struck on the ear by a block, causing a sore which never healed, as he was constantly picking it.

Mr. SYDNEY SCOTT thought the condition must be very rare, and it would be interesting to hear whether other members present had seen many cases of sarcoma of the pinna. He had seen only one other.

Mr. MACLEOD YEARSLEY said a case of melanotic sarcoma of the pinna, occurring in a girl, aged eleven, had been published by Stowers.¹

The PRESIDENT said it must be a very rare condition; he had seen only one case of the kind.

A Case of Hysterical Deafness Diagnosed (and Cured) by the Caloric Vestibular Test.

By DAN MCKENZIE, M.D.

The events in this case dramatically exemplified the value of the vestibular tests in the diagnosis of hysterical deafness. The patient, a middle-aged woman, had been very deaf in the right ear since childhood and had depended entirely upon the left ear, the hearing power of which had been very good until two months before she came to hospital, when it began to disappear—gradually—she said. The hearing tests worked out as follows:

¹ *Brit. Journ. Derm.*, 1893.

	Right.	Left.
Whisper	— ∞	— ∞
Conversation	?	6 in.
Tuning-fork (256):		
Meatus	— ∞	— ∞
Mastoid	— 5 sec.	— 5 sec.
Weber	?	?
Rinne	—	—
Galton	4	2.2

The right membrane showed scars; the left an old perforation.

There was nothing in the case so far to suggest hysteria, and, indeed, it was looked upon as an instance of labyrinth degeneration supervening upon old middle-ear disease, the only point of interest being the comparatively recent involvement of the left labyrinth. In order to ascertain the condition of the vestibular sense the cold caloric test was applied after the manner I usually adopt, *i.e.* measuring the induction period. In the right ear a very slight nystagmus appeared in 60 secs. (normal = 25 to 35 secs.), and only very trifling vertigo was experienced. In the left ear, on the other hand, marked nystagmus appeared in 25 secs. with vertigo, and a sudden outburst of tears and sobs. When this had subsided the patient declared that she could hear, and on examination it was found that the whisper could now be heard in the left ear at a distance of 24 ft., while in the right ear the hearing remained as before.

The patient then volunteered the information that she had several times lost her voice, and had had it restored "by the battery." And there can be no doubt that it was the memory of this previous successful treatment, coupled with the profound mental shock of the violent vestibular stimulation, which cured her deafness on this occasion.

The contrast between the vestibular reactions in the two ears obtained at the same sitting in the same patient is sufficiently striking to require no comment.

I do not know whether it has been observed that hysterical deafness usually appears in people who are already rather hard of hearing; presumably the existence of the slight deafness supplies the suggestion.

The PRESIDENT said he would take exception to the last paragraph in the notes. He had not seen many cases of hysterical deafness, but he could recall several where there had been no previous deafness at all.

Dr. McKENZIE, in reply, said he had seen three or four cases of hysterical deafness in the last two or three years, and in all of them there was a history of previous deafness. Then the hysterical deafness came on and made the patient absolutely deaf, and after the hysterical deafness passed off there was some degree of deafness still remaining. Perhaps it was too strong a statement to apply the term "usually" to what was, after all, merely a personal experience.

A Case in which the Cure of Constipation induced the Disappearance of Aural Vertigo (Ménière's Syndrome).

By DAN McKENZIE, M.D.

On a previous occasion¹ I showed a case in which severe aural vertigo of the Ménière type underwent benefit as a result of vegetarianism and

¹ JOURN. OF LARYNGOL., RHINOL., AND OTOL.

iodide of potash. In order to complete the record of that case I take this opportunity of noting that the patient's attacks entirely ceased after six months' treatment. He is now quite well and has returned to work, and is still a vegetarian. In the present patient the symptoms were similar but much less severe. And here also dieting, albeit of a different kind, has abolished the attacks.

The patient, a man, aged thirty, came to hospital complaining of tinnitus in the left ear. The hearing tests show the signs of slight nerve-deafness. They are as follows :

	Right ear.	Left ear.
Tuning-fork (256) :		
Meatus	\pm	-4
Mastoid	\pm	-3
Weber lateralised to right.		
Rinne	+	+
Galton	2.5	3

Vestibular tests : Right ear—Nystagmus in 30 secs. ; rather small movements ; no vertigo. Left ear—Nystagmus in 25 secs. ; vertigo.

On running over the nervous system nothing was found to explain the oncoming nerve-deafness, and the middle ears seemed to be healthy. But on going into the history the following facts came to light : Nine years ago he began to suffer from recurrent attacks of vertigo and vomiting. The intervals between the attacks were prolonged at first (eighteen months, six months, etc.), but became gradually shorter as time went on ; they were never frequent, however. The first symptom observed was tinnitus in the left ear. This was followed in about half an hour by deafness in the same ear and vertigo so violent that he had to lie down. Sickness and vomiting followed, and then the whole of the unpleasant phenomena rapidly disappeared. There was no loss of consciousness. These attacks recurred at intervals during a period of seven years. For the last two years he has not had any return of them, and it would seem from his replies that the disappearance of the attacks coincided with the cure, by means of appropriate dieting, of the constipation from which he suffered. It is noteworthy that he applied himself to the cure of his constipation in order to put a stop to periodical hæmorrhage from hæmorrhoids. There is probably no direct causative link between the hæmorrhage and the vertigo, for he states positively that the vertiginous attacks preceded the appearance of the bleeding in point of time. During the last two years the tinnitus has become persistent.

With regard to the pathogenesis of this train of aural symptoms, we may assume the influence of a gastro-intestinal toxin acting either upon the nerve-endings within the labyrinth or upon the nerve-centres. The later appearance of persistent tinnitus with nerve-deafness favours the supposition that the site of the lesion—whatever that lesion actually may have been—was in the labyrinth, and not in the central nervous system.

Such cases as these show that what popularly pass as "bilious attacks" are at times the occurrence of the labyrinth storm known as "Ménière's syndrome."

Meatal Exostosis, and Patient after Removal.

By C. E. WEST, F.R.C.S.

Male, aged twenty-six. Left meatus was completely blocked $\frac{1}{2}$ in. within the opening by a fixed, hard, pink mass, somewhat lobulated on

the surface. It was not tender, but was sensitive to touch. Symptoms: Deafness and pain, apparently due to pressure. Operation (September 27): through post-aural incision. The growth was detached *en bloc* by the gouge: its attachment was to the outer edge of the tympanic plate below and to the floor of the bony meatus for about $\frac{1}{4}$ in. After removal, a small attic perforation with cholesteatoma was visible. The outer attic wall was removed and a graft introduced into the meatus.

The specimen is a somewhat nodular mass of bone, measuring 16 mm. by 10 mm. at its base, and 10 mm. in height. The surface of section seems to be closely cancellous. The patient may be fairly called an infrequent bather.

Dr. PRITCHARD said he would like to know if the exostosis could have been broken off with a pair of dental stump forceps. Although apparently the attachment was much larger than usual, he thought it was one of the cases of single exostosis which were totally different from the ordinary ones, and which had usually a very small attachment.

Mr. WAGGETT recalled a case of exostosis in which this apparently trivial condition resulted in a fatal issue. The patient met his death through falling into the fire, presumably in an attack of vertigo.

Dr. DUNDAS GRANT said exostoses should be distinguished from hyperostoses. Pedunculated exostoses were usually so small that they could be extracted through the meatus, and on more than one occasion he had removed them by means of Hovell's plan—boring a hole into the exostosis and inserting a screw with a handle to pull it out. But on one occasion he tried to do this, and failed on account of the shape of the exostosis. It was almond-shaped, and extended a long way downwards, making a space for itself below the level of the floor of the meatus. It could only be removed by means of a post-aural incision, through which it was got out with ease.

The PRESIDENT said that in discussing the question a sharp line should be drawn between exostosis and hyperostosis from the points of view of both aetiology and treatment. Not long ago he was criticised by members of the Section for making the remark that exostosis was a rare disease in the ear, being assured that it was very common in the south. He did not think it was common in the north.

Epithelioma of the External Ear.

By G. N. BIGGS, M.B.

The patient was sent to the hospital on account of a small growth on the upper part of the right auricle, which had been present for eight weeks. It was rapidly increasing in size. The patient complained of no other symptoms. On examination, a small hard mass was found on the upper part of the pinna. A piece was removed for microscopical examination, and was found to be an epithelioma. There was no glandular involvement. The growth with the upper part of the pinna was removed, the wound healing by first intention.

Temporo-sphenoidal Abscess and Meningitis following Middle-ear Suppuration.

By G. N. BIGGS, M.B.

Twenty years ago the patient had had discharge from both ears, the left being the worst; at that time the patient was very irritable and had

frequent severe headaches on the left side. Twelve years ago the discharge in both ears ceased, and the patient has had no headaches or any other symptoms from that time. Seven days ago he was seen complaining of severe pain in the left ear of seven days' duration. On examination the membrana tympani had been found to be bulging, and had been incised. Seven days later he was brought to the hospital, and came under my care for the first time, his wife stating that for four days the headache and pain in the ear had been unbearable, and that for the last two days he had been delirious. A careful examination of the patient was quite impossible owing to his great restlessness. At intervals he cried out, and held his head as if in very great pain. Temperature, 102.4° F.; pulse 100 and slightly irregular. *Tache cérébrale* was easily elicited.

An immediate operation was undertaken, with the hope that if the meningitis was in an early stage an attempt might be made to save him by drainage through the labyrinth. Under the anæsthetic a lumbar puncture was performed, when it was found that the cerebro-spinal fluid was under pressure, and was turbid. The eyes were also examined: optic neuritis was found to be present on the left side; there was also engorgement of the vessels on the right side. The operation revealed the presence of pus in the labyrinth, and a much too extensive meningitis for any operative interference. Three days after the operation the patient died.

At the *post-mortem* examination a very interesting condition was revealed. The patient had died from an extension of the disease through the labyrinth and internal auditory meatus. Cultures from the pus in the middle ear, labyrinth and base of the brain revealed the same organism. The convulsions over the left temporo-sphenoidal lobe were seen to be much flattened, but otherwise quite healthy. On section of the brain, however, a very large temporo-sphenoidal abscess was revealed, the walls being very thick. A bacteriological examination of the contents proved them to be sterile. Evidently the abscess dated from the middle-ear disease twenty years previously, the abscess becoming encapsuled and the middle-ear suppuration ceasing. The case is interesting, as it is, I think, rare to find a case developing a severe intra-cranial lesion secondary to middle-ear suppuration recovering, only to fall a victim to a different intra-cranial lesion secondary to a second attack of middle-ear disease. The man was a boxer, and had been fighting regularly for the last twenty years or more.

PROCEEDINGS OF THE ROYAL SOCIETY OF MEDICINE—LARYNGOLOGICAL SECTION.

November 3, 1911.

DR. STCLAIR THOMSON, *President of the Section, in the Chair.*

Expansion of the Jaws, by means of Dental Plates and Screws, for Nasal Obstruction due to Narrowed Nasal Passages.

By DAN MCKENZIE, M.D., AND HENNING JAMES, L.D.S.

THE treatment of this type of nasal stenosis has hitherto been unsatisfactory. The septum is usually deflected, but its rectification fails

to provide sufficient room; adenoids are not infrequently present, but their removal does not cure the mouth-breathing, the reason being, of course, that the nasal passages are narrowed by the non-expansion of the superior maxilla. The important detail in this method of treatment is that the expansile pressure of the plate on the teeth must be rapidly induced. The screw should receive a turn every day, or every other day, and the whole process is complete in a few weeks. The treatment may be rather painful. Naturally, the younger the patient the better the prospects of improvement. The present patient, a young woman, aged nineteen, has worn the plate for about four weeks. She reports great improvement, but as she has had adenoids removed also, all the betterment cannot be attributed to the dental treatment.

Dr. BRONNER asked if it was not rather dangerous for children to wear a plate of that kind pressing on the teeth for a long time. He thought the teeth might be pressed and grow outwards. He understood that in young children the teeth could be made to grow in almost any direction.

Dr. DONELAN thought the result of the treatment very good, bearing in mind the age of the patient. The improved nasal breathing was probably the physiological effect of the removal of the adenoids. He thought the apparent widening of the alveolar arch was due rather to rotation of the teeth than to any actual movement of the superior maxillæ in the horizontal direction, certainly not to such an extent as would effect the width of the nasal cavity. Very good cosmetic results were sometimes obtained, especially in young patients, by the use of dental plates. He instanced the case of a girl who had marked buccal deformity resulting from adenoids in whom a remarkably good result had been obtained by Mr. Lloyd-Williams by the use of plates after the adenoids had been removed. No screw had been employed, and he could not imagine the soft parts tolerating any pressure that could possibly affect the position of the bones.

Dr. WATSON WILLIAMS said the case was of such interest that he hoped the exhibitors would try and show it again, say in a year's time, after there had been fuller experience of the treatment.

Dr. DUNDAS GRANT thought it could not be doubted, from what had been said by most reputable operators in that line, that the treatment was efficacious, and workers in England could justly blame themselves for not having taken it up sooner. The Section was indebted to Dr. Dan McKenzie for having brought the matter forward. When Dr. Mercer, of Detroit, was in this country, he was surprised to see that the procedure was not in general use here. With regard to the effect of it in this case, the patient was convinced that her nasal breathing was better than it had been formerly, but as Dr. McKenzie said, the removal of the adenoids had something to do with it. The casts which Mr. James had brought were, however, absolutely convincing as to the enlargement which had taken place. The vault was lowered, and the septum therefore straightened out. He would like to know how the method would answer when the lower jaw was already too small. He had such a case under his observation recently, in which he thought that plan of treatment would be applicable, but the lower jaw was so small that there was no bite, even at the sides, and if the upper jaw was widened the patient would have been in a still worse state.

Dr. W. HILL asked what was the limit of age at which such a procedure would be beneficial. Nineteen seemed an unfavourable age, and he would like to hear if the exhibitors expected to be able to increase the

width of the arch sufficiently to widen the nasal passages, and if they could not devise some means for the measurement of the nasal passages, not by the graphic method, but by means of casts, which would be convincing. He was open to conviction, but he would require strong evidence to believe that the nasal passages could be very much enlarged at the age of nineteen by alveolar expansion.

The PRESIDENT (Dr. STCLAIR THOMSON) said that the chief point was as to whether there was risk of pressure outwards or rotation of the teeth, and whether proof could be afforded that the nasal passages were enlarged by the method. This latter might be tested by means of a so-called rhinogram, for setting out the respiratory area. He had been inspired by reading the American journals on these matters, and he had seen many cases which were under dental friends in London. He also would like to know what were the indications as to age in these cases, because some dental surgeons had sent cases back to him with the statement that the child was not the proper age for it to be done. Evidently dentists did not like cases too young.

Dr. DAN MCKENZIE, in reply, pointed out that the object of the treatment was not to displace the teeth: that if the teeth were displaced by it, the treatment was so far not accurately directed towards its end. The object of the treatment was to expand both halves of the jaw *en masse*, not the teeth at the expense of the alveolus, or the alveolus at the expense of the arch. So the plate having been put in the pressure had to be applied to both sides for a short space of time. By the ordinary methods of displacing the teeth by means of a plate a considerable time was taken, the teeth being moved slowly. But in the present method the teeth were not supposed to be moved at all. The movement which took place was that of the lateral halves of the jaw, and it must be brought about in a few weeks. The plates were made so as to press on the teeth only, not on the soft parts. Reports from abroad showed that such cases were cured by this form of treatment. The method caused pain, and required assiduous and daily care, but the results were extremely good. He showed the case, not to show that the treatment had succeeded in this particular instance, but rather with the idea of advertising the treatment, so that it might be more widely carried out in this country. The patient herself felt quite certain that she breathed better now than formerly, and he believed that this was not altogether the result of the removal of her adenoids, because in that particular form of nasal stenosis no operation, whether for the removal of adenoids or the rectifying of the septum, would make any difference to the nasal respiration. Something more was wanted, and this was the only method he knew of in which an attempt was made to remedy what had hitherto been incurable.

Mr. HENNING JAMES, in reply, said the plate must be made to prevent rotation of the teeth. The little vulcanite plates must fit quite well to the teeth, so that the teeth could not rotate. With regard to the question of pushing out the teeth, that was influenced by the direction of the force exerted. The force must be so applied that the teeth did not splay outwards. In answer to Dr. Grant's remark about the lower jaw, it required an appliance to expand the teeth in the lower jaw. He did not think one could do it with a jack-screw. It could be brought about by means of the ordinary method of using expansion plates. With regard to bringing down the arch, he had seen some cases of this in which it was done in children of thirteen or fourteen years of age. It took about two years to accomplish, but there was no question of nasal treat-

ment in them, only dental treatment. No doubt the arch had come down considerably, and he had in his possession some models which would show it. The whole arch was broader and flatter. In respect to bringing back the incisors, if one gave a wider arch at the back of the month one could carry it to such an extent that the incisors could be pulled into their proper place. But that had no connection with this treatment; it was purely dental. With regard to age, he saw one patient, a woman, aged twenty-seven, who had considerable expansion in the upper jaw, who had the treatment applied. But it was not wise to do it for patients who were getting on in years, because in them there was danger of bringing about permanent looseness of the teeth. If the procedure was carried out in a patient who was approaching thirty years one should be particularly careful to avoid overdoing it; the patient should be examined every day. He did not think there was any age at which one could not push the teeth outwards. It was wiser to wait until the molars and premolars were in place, *i. e.* about the twelfth or thirteenth year.

Epithelioma of the Larynx in a Man, aged twenty-three.

By STCLAIR THOMSON, M.D.

This patient was shown at the April meeting of the Section.¹ The microscopic section of a portion of the larynx showed it to be malignant, although the clinical symptoms were very unlike epithelioma. The case was discussed by Dr. Watson-Williams, Dr. Scanes Spicer, Dr. Jobson Horne, Mr. De Santi, and Mr. Tilley, and the general view was that the case was quite unlike an epithelioma. In the meantime the glands had become infected, and a portion of one had been removed and a section made. It was again pronounced to be epithelioma.

Dr. STCLAIR THOMSON added that the man was not well enough to be present at the meeting, but the section was under the microscope. The slide had been inspected at a clinical meeting of the Medical Society of London, and had also been sent to the Morbid Growths Committee.

Dr. W. HILL asked if any further doubt had been thrown on the nature of the case. He accepted the diagnosis, but the early age made one at first doubtful. Mr. Hope, however, had recently had a case of malignant growth of the œsophagus in a man, aged twenty-seven, and the clinical diagnosis was confirmed by microscopical examination. He believed fourteen years was the earliest age at which a genuine growth of the kind had been known. But it was very unusual and likely to lead to a wrong diagnosis for a few months.

Dr. KELSON said that Mr. Rose stated that the Section had been examined by members of the Morbid Growths Committee, and had been submitted to Dr. Andrews and to Mr. Shattock. The opinion expressed by all who had examined it was that the growth was an epithelioma.

The PRESIDENT said that clinically the case looked like one of perichondritis. He scraped away some tissue when again looking into the larynx, and the report on it had just been read. The man was now having hæmorrhages, and was going downhill very fast. One of the glands was taken away, and the microscope showed it be epitheliomatous.

¹ JOURN. OF LARYNGOL., RHINOL., AND OTOL., vol. xxvi, p. 310.

**Pedunculated Intrinsic Growth of Larynx in a Man,
aged forty-one.**

BY J. EVERIDGE.

The patient, a Covent Garden porter, attended King's College Hospital in September, 1911, complaining of hoarseness of two months' duration, which came on gradually. He coughed up a little blood-streaked sputum about the time when first noticed; none since. Syphilis denied. Condition on September 17: A pedunculated tumour, the size of a small cherry-stone, growing from the free margin of the posterior fourth of the right vocal cord. Tumour smooth, globular, and of a uniformly purplish-red colour; the pedicle lax, allowing tumour to be drawn into the glottis during inspiration and for the cords almost to meet over it, and during expiration to be blown out. Cords moving normally. It was diagnosed as a benign tumour, probably a vascular fibroma. Three weeks later (October 13): When patient reappeared the surface of the tumour was less uniform, and presented on its summit an excavated nodular area with sharp margins, suggesting partial necrosis; the capillaries on the rest of the surface were somewhat dilated and a small hæmorrhage was seen. Tumour was rather larger, the pedicle broader. The right cord was now seen to have lost its normal colour, and to be distinctly reddened, suggesting some inflammation or possibly infiltration. Though moving well it seemed to be slightly less mobile than the left. Enlarged glands could just be felt along anterior border of sterno-mastoid and beneath angles of lower jaw. October 20: The process of necrosis has got a stage further, for the tumour now presents a deep angular bay with its base towards the original summit of the tumour. The reddened appearance of the cord is more marked, but cord moves well. October 27: There is no marked change in condition of tumour to-day. As the tumour has some atypical features, the opinion of members is invited. Clinical examination at the first appearance suggested an entirely innocent neoplasm, but the situation, the age of the patient, the nodular dirty-grey surface, inclined one to the opinion that in this case only the microscope will settle the diagnosis. The case was thought to be interesting enough to show before the tumour was removed.

Dr. DUNDAS GRANT said that many years ago Mr. George Stoker brought before the British Laryngological Association a case of pedunculated growth. He removed it with the snare, and the microscopist reported that it was an epithelioma. Dr. Grant had not seen such a case since. The specimen was almost unique. The most curious surprises Dr. Grant had had were in connection with what appeared to be simple growths which turned out to be tuberculous. He thought that was probably the nature of the present one. The base from which it grew was infiltrated, and a confirmatory feature in favour of his view was the man's loss of weight. His muscles were now in a flabby condition. There was also a suspicious ulceration on the growth.

Mr. HERBERT TILLEY favoured the diagnosis of fibroma, and thought that the ulceration was due to the constant friction and pinching of the growth by the cords. He thought the ulceration was due to the friction on the distal part of the growth where its blood supply was poor. If it was to be removed he hoped a section of it would be shown at a future meeting of the Section.

Dr. JOBSON HORNE said the growth was in the situation usual for tuberculous growths, and that was the only evidence in favour of it being a tuberculoma.

Mr. MARK HOVELL said he would not like to express a definite opinion; he would rather remove the growth and then decide, because naked-eye appearances were often deceptive.

The PRESIDENT said he also had had a case of pedunculated growth in the same situation. The base was not infiltrated, but under the microscope it was found to be typically epitheliomatous. That patient, however, was older, viz. fifty-nine.

Mr. EVERIDGE, in reply, said the tumour would shortly be removed, and he would be glad to report the result of the microscopical examination.

Two Cases illustrating Unusual Complications of Chronic Empyema of the Nasal Accessory Sinuses.

By HERBERT TILLEY, F.R.C.S.

CASE 1.—H. P——, male, aged seventy-one, applied to the Ophthalmic Department of University College Hospital because for a month he “had seen double, and for three months he had noticed a swelling in his right upper eyelid.” Examination showed that the eye was displaced downwards and outwards, and there was a fluctuating, rather tense swelling between the inner half of the bony margin of the orbit and the eyeball. It was not painful on pressure, neither had he suffered from any headache or inconvenience beyond the diplopia. The skin was not red nor inflamed. He made no mention of any nasal discharge, but when the nose was examined pus was seen in the middle meatal region; a foul discharge was washed from the right antrum, but it was not possible to pass a cannula into the frontal sinus. May 3, 1911: The frontal sinus was opened by an incision in the line of eyebrow, terminating above the internal canthus. On exposing and opening the tense swelling foul pus escaped, and a probe readily entered the sinus. The anterior wall of sinus was freely removed, when further examination showed that the roof of the orbit and the posterior wall of the sinus had been completely destroyed, so that the contents of the orbit below and the dura mater posteriorly assisted to form the walls of a large empyema. The sinus cavity was carefully cleansed, a free opening made into the nose, and the wound lightly packed. A Caldwell-Luc operation was immediately carried out on the right maxillary antrum and diseased ethmoidal regions removed. The patient has made an uninterrupted, though slow, recovery, and has remarkably little deformity. An interesting feature in the case is that he never complained of any headache or other inconvenience beyond the diplopia.

CASE 2.—Mrs. H——, aged thirty-five, applied to University College Hospital in July, 1911, because she was feeling very ill and there had been a swelling for five weeks above the right eye, which burst on July 28. The following facts were elicited: An offensive discharge from right nostril for five weeks; a swelling around the upper and inner part of the right eye for five weeks, which burst on July 25; diplopia five weeks; nasal obstruction for nine weeks. Patient was a thin, frail woman who looked very ill on admission. The right eye was proptosed and the conjunctiva red, swollen, and chemosed. The upper eyelid was very swollen, red, and cedematous, a condition which passed upwards over the lower

right frontal region and shaded away about the region of the "eminence." Inferiorly the swelling extended downwards over the cheek to the level of the right angle of the mouth. A probe passed into the fistula under inner angle of eyebrow led to carious bone about the inner and posterior region of the orbit, but not into the frontal sinus. The whole of the swollen region was very tender on pressure. Examination of the nasal cavity was impossible because the entry thereto was quite blocked by a much swollen hyperæmic inferior turbinal. Posterior rhinoscopy revealed a quantity of pus in the posterior choana. Temperature, 100° F.; mental condition very obtuse. An incision was made as in Case 1, passing through the fistula. The frontal sinus was exposed and opened; it was small and contained thick, viscous pus. The contents of orbit were then pressed gently outwards and downwards by a small spatula, and a quantity of pus escaped from the inner and posterior regions of orbit. The ethmoid region was extensively diseased, and a black, foul sequestrum, the size of a horse-bean, removed from the region of the posterior cells. The diseased areas were carefully removed and a light dressing placed in frontal sinus. A Caldwell-Luc operation was then carried out on the right maxillary antrum, which was found to be full of thick, putty-like, caseated pus. Patient very drowsy for day or two after operation, but local conditions rapidly improved. On August 4 till the end of the month anxiety was caused by physical signs in the right chest indicating consolidation or the development of an empyema. These were associated with pyrexia (100° to 103° F.) and a distressing cough. The lung and pleura were aspirated three times, but with negative result. Early in September the lung symptoms cleared up, and the patient is now quite well and shows very little deformity as a result of the operation on her frontal sinus.

Dr. W. HILL said it was very unusual to get in such a condition as rhinitis caseosa in the antrum. He thought that term accurately described the putty-like contents mentioned by Mr. Tilley. He had seen it only in cases where a foreign body was present, and he once had to deal with it in a valuable horse, the winner of a Grand National. He removed a putty-like mass as large as his fist from the frontal sinus under cocaine anæsthesia. He had also shown a case before the old Society where a rhinolith, in association with unilateral rhinitis caseosa, was present in the antrum, the antro-nasal wall having disappeared.¹

Dr. WATSON-WILLIAMS asked if a bacteriological examination had been made. It would add to the interest of many of the cases shown before the Section if bacteriological examinations were made. One of the points of great interest was as to how far different micro-organisms influenced the clinical course of cases otherwise apparently identical. He congratulated Mr. Tilley on the excellent results obtained, cosmetic as well as surgical.

Dr. DUNDAS GRANT said he regarded the most unusual feature in the cases as the black sequestrum from the region of the posterior cells. It was unusual to find it in a case where there was not some dyscrasia such as syphilis, although there seemed to be no sign to suggest that there was syphilis here.

Dr. HERBERT TILLEY, in reply, said he regarded the first case as unusual, because the old gentleman had lost the whole posterior wall of the sinus, so that the frontal lobe was only covered by dura mater and by granulation-tissue, and the tissues of the eyeball were also free in the floor of the frontal sinus. It was curious that he denied having nasal

¹ *Proc. Laryng. Soc. Lond.*, 1897, iv, p. 72.

discharge, or that there was anything the matter with him beyond "seeing things double." He said he had never even had headache. He was sent into the ear and throat department by the ophthalmic surgeon to see if any light could be thrown on the cause of the diplopia. The second case was unusual because of the ethmoidal sequestrum, and if any members had seen the patient at the time of the operation they would have agreed it was a most unusual case. She looked so ill that he was doubtful whether it was worth while to interfere. It was also interesting from the point of view of the condition of the antrum and ethmoidal cells. The sequestrum which he removed from the ethmoid might have had something to do with the caseous masses in the antrum and ethmoid region. In answer to Dr. Watson-Williams, with reference to the male patient, a culture of the pus organisms was made, but he could not recollect the details of the report, and the operation on the woman was performed at night, when it was difficult to get culture-tubes, and no examination of the pus was made.

Erosion or Deficiency of Nasal Bones in a Case of Multiple Nasal Polypi (Bilateral) with Sinus Suppuration.

BY HERBERT TILLEY, F.R.C.S.

Man, aged fifty-four. A probe passed into either nasal cavity can be easily felt under skin covering bony deficiencies. The man is a patient from whom, once yearly, several polypi have been removed, but the condition described above was noticed for the first time yesterday. No history of syphilis; no signs of malignant disease in nose.

Mr. HERBERT TILLEY added that the man had nasal polypi with suppuration for many years, and there was a deficiency of bone in the region of the nasal processes of the superior maxillary bones—the deficiency was bilateral and about the size of a threepenny-piece. On the previous day he saw the patient for the second time this year, and thought that the lacrymal sac was inflamed. Closer examination, however, showed that the swelling was a puffiness of the skin just beyond the nasal bones. One could pass the probe up the nose and feel it under the skin covering the bony defects. He had not previously seen a similar case, and he did not know whether it was due to slow erosion of the bone from within, or congenital.

Mr. CLAYTON FOX said that some years ago he saw a case of nasal polypi of very long standing, and when the polypi were removed they appeared to be fibroid. In that case there was a decided absorption of bone. It was unilateral, but in this case the absorption seemed to be symmetrical, and the parts absorbed were the ascending processes of the superior maxillæ.

Dr. KELSON said he showed a similar case in 1903, at a meeting of the Laryngological Society; the bone in that case was absorbed; there was not merely separation of the nasal bone—a finger could be well inserted into the cavity formed.

Dr. PATERSON said that as it was bilateral, the condition might be a congenital deficiency. But he thought the opening on the left side was distinctly larger, and this inequality suggested absorption from within.

Melanotic Sarcoma of the Nose.

BY G. WILKINSON, F.R.C.S.

(See p. 1.)

Fibro-angioma growing from the Inferior Turbinal.

BY G. WILKINSON, F.R.C.S.

The growth was removed from the upper part of the right inferior turbinal, from near the posterior end, of a woman, aged forty-six, who had suffered from severe bleeding from the nose for six weeks. The patient was decidedly blanched. The tumour had a slender pedicle, and was removed with the snare. The base was thoroughly treated with the galvano-cantery. Histological report, by Professor Beattie, of the Sheffield University: "The tissue is composed of spindle-cells, with long processes, and numerous blood-vessels. There is a definite capsule. In parts myxomatous tissue is abundant, with a good deal of blood. The general appearance suggests a soft fibroma, or slow-growing spindle-celled sarcoma." The tumour appears to be of the same nature as the more common "bleeding polypus" of the septum, and similar to the specimen shown at the meeting of the Section in February last year by Dr. Somerville Hastings.

Dr. PEGLER said this specimen would constitute a valuable addition to the Society's collection of these multiform growths. He saw no resemblance to Mr. Somerville Hastings' case, a section of which he had brought with him for comparison; the latter was made up of much looser tissue, grew from the anterior end of the turbinal, and was a smaller growth altogether. The present specimen was, in fact, a true naevoid fibro-angioma, and seemed to be linked in affinity with the large fibro-angiomas of the naso-pharynx. It had no true epithelial border, but was surrounded by a denser layer that might be organised blood-clot. The body was traversed by fibrous septa, some of which appeared in transverse section. The vessels were very small, but abundant, and not lined by endothelium. The usual fibroblasts in various stages of development were very conspicuous. A large part of the growth was literally saturated with freshly effused blood. Replying to the President, the speaker said he could think of no more comprehensive term for "bleeding polypus" than discrete nasal angioma, as it included septal, turbinal and alar examples, and he was pleased to see his synonym amongst those mentioned in Dr. StClair Thomson's recent work.

Dr. KELSON said that in 1903 he showed a case of bleeding polypus which grew from below the inferior turbinate at the anterior end. When the President, Dr. StClair Thomson, in the following year showed two cases of bleeding polypus of the septum, he said he did not think his (Dr. Kelson's) case should be included, and that the bleeding polypus of the septum was an entity by itself, the pathology not having been worked out. He would like to know if, in the President's later opinion, those cases should not be all more or less classed together, or if, when the growth happened to be on the septum, the cases should be regarded as forming a separate class.

The PRESIDENT said that since the date to which Dr. Kelson referred, and after seeing his and Dr. Somerville Hastings' cases, he had modified his opinion. He had quoted both those cases in his book. It was suggested that the term "of the septum" should be discontinued, and that they should be known as bleeding polypi of the nose.

Papilloma of the Palate in an Old Man.

BY H. LAMBERT LACK, M.D.

The patient has an extensive papillomatous mass on the soft palate,

chiefly on the right side. Clinically the disease might be mistaken for epithelioma or tubercle. This, in fact, was the case until the microscopical sections had been made of a large piece removed from the edge of the growth. Microscopical section exhibited.

Dr. H. J. DAVIS said that, in spite of the pathological report, he would regard the growth as malignant. He did not think it was possible to meet with a papilloma so extensive and diffuse, and yet of a simple nature.

Dr. DUNDAS GRANT said he had had a case which, in its early stages, almost exactly resembled the present one. It increased in extent and became more indurated. On microscopical examination of a portion of the more indurated part he found distinct signs of epithelioma.

The PRESIDENT asked how long Dr. Lack had had the case under his care, and what was the feel of the tumour. He had had a similar case in a man who was only aged forty-three, and showed the case at the Medical Society of London as a papilloma of the soft palate. He had a drawing of it, which appeared in his book. It turned out afterwards to be malignant disease.

Dr. LACK replied that he had not seen the patient for two months. His original diagnosis was epithelioma; in fact, he took the patient into the hospital with a view to operation. It was only when the microscopical sections were examined that it was found to be papilloma. The piece removed was not just a snip, but was a deep section cut right through the edge of the growth, involving much of the normal palate. No one who looked at the section could fail to recognise that it was certainly a papilloma.

The PRESIDENT requested Dr. Lack to report if there should be any further development.

Ulceration at the Base of the Tongue.

By W. H. KELSON, M.D.

J. B——, aged sixty-seven, clock cleaner. No history of syphilis; lungs appear to be normal. For ten years the throat has felt uncomfortable. Four months ago it became definitely sore and painful on swallowing, the pain being situated in the throat and left ear. He also complains of the accumulation of large quantities of "slime" in the throat. On examination: There is found to be a large crateriform ulcer situated at the base of the tongue on its left side; its edges and base are fairly hard and much thickened. The ulceration reaches down behind the left arytaenoid. Points worthy of note are (notwithstanding the extensive character of the disease) the mobility of the tongue, fair movement of the left vocal cord, and apparently only slight glandular enlargement.

Dr. DUNDAS GRANT thought no other diagnosis was likely except epithelioma.

Dr. DONELAN said he thought it was malignant, but asked if Dr. Kelson had had the opportunity of trying iodides and mercury, because the condition, although unilateral, was suspicious.

Dr. DE HAVILLAND HALL suggested that before trying anti-syphilitic treatment it would be well to have a Wassermann reaction done.

Dr. KELSON, in reply, said the case reminded him very much of two cases which he saw about ten years ago at the Laryngological Society of London in which the diagnosis of malignant disease was made. There

were large masses as in this case, but they turned out to be tuberculous. On that account he thought it was interesting to show the present case, although he regarded it as malignant. The man had been given large doses of iodide, after which he was considered to be better, but apparently the improvement was not real. The Wassermann reaction had not been tried as he did not regard the case as at all likely to be syphilitic.

An Affection of the Fauces simulating Secondary Syphilis.

By W. H. KELSON, M.D.

ANOTHER of a series of cases brought forward by exhibitor¹ to illustrate an affection of the fauces simulating secondary syphilis and consisting of whitish patches on an inflamed base, on the tonsils and sometimes the palate. The principal points noted about these cases are:— (1) There is no history of syphilis or any other sign of it to be found after careful search. (2) The disease tends to be chronic (over a year's duration noted), getting almost well and then reappearing. (3) The superficial character, leaving no cicatrices, and the nose and larynx unaffected. (4) Anti-syphilitic remedies have no effect whatever.

Mr. CLAYTON FOX said he did not find much wrong, but from the description set forth one should consider the possibility of the case being one of chronic Vincent's angina, although that affection usually cleared up rapidly. Still, cases had been known which became chronic. From the point of view of diagnosis it would be all important to know what the onset was like, if the patient had fever and the other ordinary concomitants.

Dr. BROWN KELLY said he had met, in quite a dozen patients, with a condition of fauces resembling that described by Dr. Kelson. The uvula, faucial arches and the upper part of the faucial pillars presented a milky appearance; usually this was slight, and as if produced by silver nitrate; in marked cases it was very like that of mucous patches. There was no erosion in any of the cases. The white appearance was probably due to the taking of alcohol by the patient prior to examination. Of his cases all but one were in men, and in the case of the woman she had been indulging in whisky. In some patients the appearance persisted, but in others it was transitory. One young man who had had six whiskies and sodas just before seeing him, and in whom the appearance was marked, presented no trace of it in three days. The fact that the posterior surface of the uvula was unaffected supported the view that it was due to intracellular changes resulting from direct irritation.

Mr. CYRIL HORSFORD thought the opportunity a favourable one to describe a case which had been most instructive to him, one which should be known, especially as the description of the present case suggested to him that it might be a mild form of the same disease. The disease in his case turned out to be acute pemphigus. It commenced on the fauces, where there were white patches, looking like mucous patches of secondary syphilis. Both tonsils were affected, and after lasting there several weeks it spread to the palate and the inner parts of the cheek corresponding with the tooth region. The theory first put forward was that the state of the mouth was due to the use of an irritating tooth-powder, but that idea was soon dispelled, because later, *i.e.* in a few weeks, typical patches of pemphigus developed over the body. It was a very severe case, and the man eventually died of acute pemphigus, the disease

¹ *Vide Trans. Laryngol. Soc. Lond.*, 1903, 1904.

having become generalised. He watched the patches on both tonsils for some weeks, until the further progress of the case revealed its nature. They were not benefited by any treatment. Pneumococci were found in cultures from the mouth and skin bullæ.

Dr. W. HILL asked if, in Dr. Kelson's series of cases, tobacco was a possible cause, or if he had been able to eliminate it as a factor.

Dr. DAN MCKENZIE said he had seen two or three cases similar to that described by Dr. Kelson. One of the cases was that of a young woman, in whom there was no likelihood of any alcoholism or anything of that nature. At first he thought it was secondary syphilis, as the similarity was so close, but ultimately he concluded it was a chronic inflammatory condition, and the event proved that that was so, for it cleared up without anti-syphilitic treatment. It seemed that almost any form of chronic inflammation of the neighbourhood of the fauces might, under certain circumstances, give rise to such an appearance. But there could be no doubt, in spite of the case he had just mentioned, that an irritant such as alcohol might in many cases be the cause.

Dr. KELSON, in reply, said that years ago, when he had the advantage of doing work with Dr. Lack, at Golden Square, that gentleman emphasised the value of recognising very early secondary syphilis in the throat by a very faint white milky look on the tonsil, with a very slightly reddened base. It was so faint that many people looking at the throat would not notice anything wrong. But the cases in which it was seen turned out to be the beginning of secondary syphilis. He had held this view until he saw the first of the cases now referred to, which looked exactly the same, and it was for this reason that he brought the case forward. With regard to the bacteriology, this case had not been examined from that point of view, but the others had been, and no Vincent's bacilli or other special organisms were found. With regard to the possibility of tobacco being the cause, some of the patients had been females who did not smoke, so obviously it could occur without smoking. As he had no suspicion of syphilis the Wassermann reaction was not tried.

Laryngeal Tuberculosis.

BY JAMES DONELAN, M.B.

Gentleman, aged forty-four. First seen in January, 1908. Shown in this Section in May, 1909, and June, 1910. A bad case of secondary tuberculous laryngitis, affecting chiefly the epiglottis. Treatment has consisted chiefly of cauterisations by electro-cautery and various antiseptic sprays, such as guaiacol. Silence for two years. Internally, guaiacol until a year ago. Had about forty cauterisations. The condition has been stationary for now nearly twelve months, except that three months ago a small focus appeared on surface of epiglottis and was cauterised. No change has taken place in state of arytenoids or interarytenoid space for the past three years. The pulmonary condition, affecting chiefly the right side, is also stationary. Patient's temperature, which has always been subnormal since he has been under observation, has shown a tendency to approach the normal since he has been able to resume work, and his outlook has become more hopeful. The case is shown as Dr. Donelan had been requested to try a course of new tuberculin, but the patient now hesitates lest it may, as he thinks, start up a violent reaction, both pulmonary and laryngeal. The opinion of members is requested on the case and especially this point.

Dr. DONELAN added that it was a question whether it would be advisable to treat by means of the galvano-cautery or with the new tuberculin. He considered that the patient was doing very well; he was still, five or six years after he had been condemned as incurable, living and getting about, the laryngeal condition was improving gradually, and he did not think much more could be done. The disease was, he thought, confined to the epiglottis, and the opinion expressed last year was that he should not remove the epiglottis but treat by means of the electro-cautery. The condition appeared to have been stationary for the past twelve months; there had certainly been no change in the appearance of the arytenoids.

The PRESIDENT said the case was a long-standing one, and, as far as he could see, only the epiglottis was affected. He differed from Dr. Donelan in that he did not think the patient had done well. He had had over forty applications, and he (Dr. Thomson) had never seen an epiglottis so resistant as this. It was a very chronic case, and one of the kind which he suggested might be called lupoid tuberculosis, because the usual tuberculous epiglottis did not last over two years without causing distinct distress, whereas this patient had no distinct discomfort in swallowing, and there was very little phlegm. He asked Dr. Donelan if he applied the cautery at almost white heat, and if he burnt down as far as it would go until brought up by healthy tissue. If that had been done, he thought that the epiglottis would have cicatrised and shrivelled up, and been reduced to a non-ulcerating stump in six or possibly in three months.

Dr. WATSON-WILLIAMS suggested that if tuberculin was tried it should be "P.T.O." first. But he thought that a very satisfactory way of dealing with this patient's epiglottis would be to remove it *en masse*.

Dr. DUNDAS GRANT said that if the patient had any definite discomfort, it was a case on a par with those which Mr. Hett described at Birmingham, and the epiglottis might be removed. But he thought it would be a pity to risk bringing on any reaction, as he was going on so well.

Dr. DONELAN, in reply, said he proposed to carry out the President's suggestion of applying the cautery nearly white hot and burning down deeply, if the patient would consent. At present there were very few tubercle bacilli in the sputum, and the lungs were going on well. Three months ago, however, a tiny point was evident on the left side of the epiglottis. The thickening now seen appeared to consist almost entirely of cicatricial tissue.

Osseous Obliteration of Frontal Sinus after Operation.

By JAMES DONELAN, M.B.

Patient suffered from left intra-nasal suppuration following influenza. Admitted to Italian Hospital in October, 1907. Anterior portion of left middle turbinal removed. As no improvement followed, in November the left maxillary antrum was opened by the angular trocar and chisels shown. Recovered completely and kept well until autumn of 1909, when she again got influenza with marked inflammation, apparently of all the left sinuses. The frontal was opened in October, 1909, and with the fronto-ethmoidal and ethmoidal cells was curetted and drained by Killian's method. Patient remained well through the winter, but in the spring of 1910 had renewed frontal inflammation. The sinus was fully opened again and drained, and in replacing the periosteum it was laid into the

cavity. Several ethmoidal cells were dealt with on this occasion, and at several sittings under local anæsthesia. Patient remained apparently quite well until September, last year, when she again suffered from severe pain in the brow and intermittent discharge from the fronto-nasal duct. An incision was made again through the left eyebrow, but as the frontal sinus was found obliterated by solid bone at a depth of 7 mm., the reopening was abandoned. The pain, which was probably due to implication of the supra-orbital nerve in the cicatrix, ceased, and the intra-nasal discharge stopped soon after the fronto-nasal duct was cleared of granulations. A few ethmoidal cells were curetted in September, 1910, and the patient has now remained quite well (but for a cold caught a few days ago) for over twelve months.

Dr. DONELAN explained that the chief point in the case was that the frontal sinus was opened three times, twice fully. At the second operation the periosteum was carefully turned in, and later the patient was admitted into the hospital on account of fresh symptoms. For a distance of 7 mm. it was filled with solid bone, and the case was like one in which the mastoid was almost completely renewed by re-growth of bone after operation. He had not had a skiagram taken, but judging by the resistance to the hammer and chisel so far as it had been traversed, it seemed probable that it was solid. The patient had made an excellent recovery.

Paralysis of the Right Vocal Cord, with Affection of the Third, Sixth, and Tenth Motor Cranial Nerves.

BY ANDREW WYLIE, M.D.

H. R.—, male, aged twenty-four, cabinet maker. Has been under the exhibitor's care since September 12, 1911. He was knocked down by a cart five years ago. Was unconscious for twelve hours. Laid up in bed for two weeks, and then returned to work, and for a year was fairly well. Then his right eye became affected. Double vision has occurred intermittently ever since. Was treated at King's College Hospital for ophthalmoplegia of the right eye. No history of specific disease. No headache. Occasional nocturnal vomiting.

Dr. Purves Stewart's and exhibitor's report of the condition of the patient is as follows: Optic discs practically normal. Right-sided ptosis with severe external ophthalmoplegia of the right eye, but not complete. Right globe can be moved 1 mm. up, down, in and out. Left eye can be moved well outwards, but the inward, upward, and downward movements are deficient; thus all the external ocular nerves are affected except the left sixth. The right ptosis is part of the palsy of the right third nerve. Both pupils react to light. Patient cannot converge, so that the reaction to accommodation cannot be satisfactorily tested. The masseters and temporals are powerful. There is a curious weakness and wasting of most of the facial muscles. The orbiculares oculorum are both excessively weak. The orbicularis oris is practically completely paralysed, so that the patient cannot whistle, blow out the cheeks, nor purse up the lips. The palate moves moderately well, but the voice is nasal, and there is frequent nasal regurgitation. The right vocal cord is fixed. The tongue is somewhat small, but moves freely in all directions, and is free from fibrillary movements. The sterno-mastoids, trapezii, and all the muscles of the upper limbs, trunk, and lower limbs are normal. The reflexes are

normal in all the limbs. The facial muscles show a marked diminution to Faradism; in particular the orbicularis oris does not react at all. The masseters and the tongue muscles react briskly to Faradism. To galvanism the reactions in the face are simply diminished without polar changes. Dr. Wingrave reports the Wassermann test negative. An example of the cerebro-spinal fluid has not yet been taken. The case is very unusual, and is suggestive of a combination of myopathy of the facial muscles with an affection of both thirds, the right sixth and the right tenth motor nerves.

Dr. DUNDAS GRANT asked if in this interesting case it was certain that the disease started as the result of the injury. He asked the question because it seemed a long interval between the accident and the development of the symptoms.

Mr. CLAYTON FOX said he thought the case was of more interest to the neurologist than to the laryngologist. The lesions were so far apart with regard to the nuclei that it seemed probable that it was a case of sclerosis of the nuclei.

Dr. WYLIE, in reply to Dr. Grant's question, said the patient got better after his injury. It was a year since he had symptoms, and iodide of potassium and mercury produced no improvement. He was only six weeks under treatment, and he brought the case hoping to hear suggestions *re* source of lesion and treatment.

Lingual Thyroid.

BY GEORGE BADGEROW, F.R.C.S.ED.

In May last patient noticed a swelling in the tongue; the throat seemed dry. She has no difficulty in swallowing, breathing, and eating. It does not seem to be getting any larger.

Dr. BROWN KELLY suggested that it was a cyst. If it was the intention of Mr. Badgerow to treat it, and in case it might turn out to be thyroid tissue, he advised that the incision be made with caution, as it might be followed by grave hæmorrhage.

Mr. WESTMACOTT regarded it as a retention cyst of the upper end of the thyro-lingual duct. It was more like this in colour; it felt soft as if it contained fluid.

Mr. HARMER asked if Mr. Badgerow thought the patient had a normal thyroid in front of the trachea.

The PRESIDENT said that in his opinion such cysts in front of the neck were best left alone unless they became unsightly.

Dr. FITZGERALD POWELL was decidedly of the opinion that the condition should not be interfered with unless it was causing trouble; he should leave it alone.

Mr. BADGEROW, in reply, said he showed the case in order to ascertain whether there was any thyroid in the tumour. Some of the members thought the tumour was soft, but he did not think so, but rather that it was firm. Possibly it was a cyst. A physician, who had had several cases of the kind, had expressed the opinion that there was no thyroid tissue in the tumour.

Cyst of Ary-epiglottic Fold.

BY GEORGE BADGEROW, F.R.C.S.ED.

Patient has some difficulty in breathing and swallowing; also complains of hoarseness.

The PRESIDENT said he had a case of cyst of the ary-epiglottic fold in a lady singer, a professional. He had not told her it was there, and she was not aware of the fact. It was on the pharyngeal surface.

Swelling in the Neck in a Child aged four and a half (?Cystic Hygroma).

BY GEORGE BADGEROW, F.R.C.S. EDIN.

First noticed the end of August, 1911; it was then the size of a small egg. It is a translucent, elastic swelling, with an impulse on coughing; moves a little on swallowing. This last week it has got much larger.

Mr. CLAYTON FOX said that when he first examined the case it seemed to him to be one of pneumatocele. He thought he could displace the whole of the tumour into the larynx. On further examination he found that he was displacing fluid into the lateral parts of the neck. From its position and mobility with the larynx during deglutition, he thought it was either a cyst of the thyro-glossal duct or one arising from a diverticulum of the ventricle, as described by Mr. Bland-Sutton, most probably the latter.

Mr. WESTMACOTT did not consider that the tumour was in the position of the thyro-glossal duct; it was too low down and to one side. In his opinion it was more like a cystic bronchocele. The right lobe on examination was found to be hard and larger than it should be for a child of the age of this one.

Dr. FITZGERALD POWELL said the tumour did not move sufficiently, in his opinion, on swallowing to be a cystic bronchocele; he thought it was a cystic hygroma.

Mr. HARMER agreed that it was hygroma. If it was known to be growing he would remove it, but it might be difficult to get away because it tracked among the main vessels.

Dr. DAN MCKENZIE said that some years ago he had shown a similar case before the Society for the Study of Disease in Children, but the patient was much younger—six months old. The interesting point was that the tumour gradually disappeared spontaneously. He thought in the present case the possibility of a similar disappearance should be kept in mind, especially as dissection of it would involve a considerable laying bare of deep structures in the neck. The tumour, cystic in front, passed under the sterno-mastoid and could be felt in the posterior triangle, where it was semi-solid. His opinion was that the tumour undoubtedly was a cystic hygroma.

Dr. PATERSON called attention to the extreme softness of the tumour. Probably it had been present some time, bound down by the deep fascia, and when it had pierced this it enlarged suddenly and extended. In the last two or three years he had had two cases very similar, and it was necessary to make a very extensive dissection in order to remove the tumour completely. It was like a bag of fluid, and, as Mr. Harmer suggested, was probably related to a hygroma. Recently a paper by Mr. Morton had appeared in the *Bristol Medical-Chirurgical Journal* on cysts in the neck, which was presented rather higher up under the angle of the jaw. The suggested origin was a bronchial cleft, and the speaker had experience of one or two such cases.

Mr. BADGEROW, in reply, said he agreed with those who believed it to be cystic hygroma.

Ulceration of the Left Ala and Vestibule of the Nose.

By W. JOBSON HORNE, M.D.

The patient, a man, aged twenty-eight, always subject to bad colds, sixteen days prior to writing this note experienced soreness of the nose, and applied various ointments without relief. Eight years ago he had lumps in the right groin, and two years ago he was treated for some form of penile disease. During the last two or three years he has had cough, and about three weeks ago he was told that he had a patch of pleurisy, which he located below the right clavicle. There is no family history of phthisis, and at the time of writing this note further tests for syphilis and tuberculosis had not been carried out.

Dr. DUNDAS GRANT said his impression was that this destruction of the ala of the nose was the result of a rupial syphilitic change coming on, as these do, before the usual time for tertiary symptoms to show themselves, and that this would explain the penile trouble, which was not a sore but a discharge, and probably a case of intra-urethral chancre.

Dr. KELSON said he thought it was a typical tertiary syphilide.

The PRESIDENT remarked that he had had a similar case some years ago, before the discovery of the Wassermann test; in that case the most active anti-syphilitic treatment did not succeed in arresting the disease. The man lost his nose and part of his cheek, and then he lost sight of him. At the Laryngological Society Dr. McBride showed some cases of pernicious ulceration on the nose, spreading to the face, which were not amenable to anti-syphilitic treatment. He asked if the Wassermann reaction had been tried in the present case.

Two Cases of Carcinoma of the Œsophagus: Lower Thoracic with superadded Pharyngeal Dysphagia: ? Paretic or Spasmodic.

By WILLIAM HILL, M.D., AND C. W. M. HOPE, F.R.C.S.

CASE 1.—Female, aged fifty-four. Under treatment by intubation.

CASE 2.—Male, aged fifty-four. Intubation temporarily discontinued.

The special points of interest common to these two cases are as follows:

(1) The stricture commences 32 cm. ($12\frac{1}{2}$ in.) from the front of the alveolar margin, *i. e.* well below the bifurcation of the trachea.

(2) Solid food is arrested in the deep pharynx, and does not enter the mouth of the œsophagus, though these regions are not invaded.

(3) There is double abductor paresis in each case.

(4) There are no malignant glands in the neck.

Arrest of solid food above the mouth of the gullet is not uncommon in the later stages of carcinoma low down the œsophagus, and (when not obviously due to local tumefaction or to enlarged cervical glands) is usually attributed to reflex spasm. There is, however, no more evidence of spasm than there is in favour of paresis of the deep pharynx, and the associated abductor paresis present in each case seems to suggest that the paresis or atony theory may probably be the true explanation. The experiences and opinions of members are invited in order to elucidate this curious complication.

Dr. HILL added that the movements of the cords varied very much.

On one occasion when the cords appeared not to move on abduction, the patient had been coëvinized for œsophageal examination, and that might

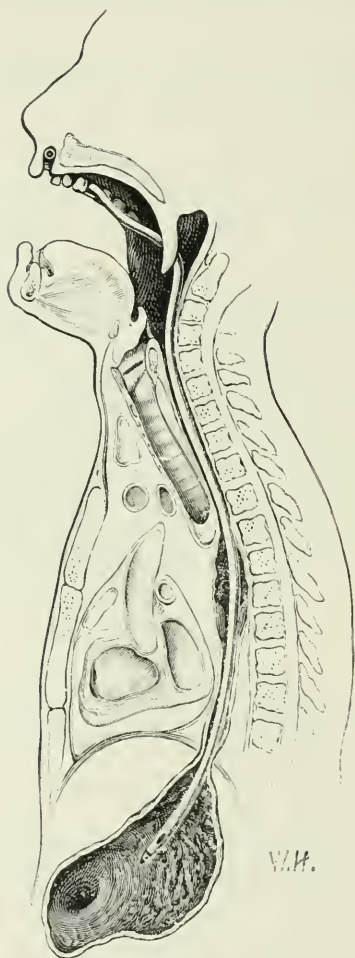


FIG. 1.—Hill's styletted oro-œsophago-gastric intubation apparatus for stricture of the gullet depicted *in situ*; the method of attachment to the teeth or to a denture is not shown in detail. This apparatus can be retained either temporarily or permanently, and often does away with the necessity of resorting to gastrotomy. Fluids are first administered by means of a tube, but later the patients are able, owing to the bougie effect, to swallow beside the tube.

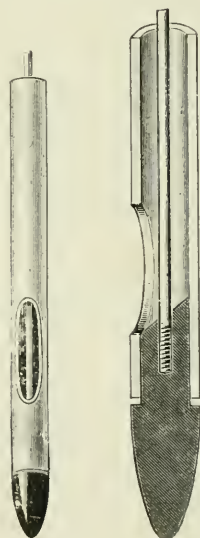


FIG. 2.—Distal extremity of Hill's oro-œsophago-gastric intubation apparatus: showing flexible silver stylet screwed into vulcanite nose-piece, with sunken portion for attachment of rubber tubing and orifice for passage of fluids. (Both enlarged.)

have made the patient appear to have more paresis than to-day. But both the patients had had marked paresis at some time or another of the abductor muscles, and the food always stuck in the pharynx, although the actual

malignant stricture lesion was low in the gullet. Under those circumstances he would be glad to know why the food should stick in the deep pharynx if not from paresis, whether functional or organic.

Dr. BROWN KELLY said the tendency for food to stick at the upper end of the gullet was not uncommon in œsophageal disease, and might occur independently of involvement of the recurrent nerve. Therefore he thought one might leave out of account paresis as a cause. In the two cases shown, anaesthesia might conceivably play a part, for when the laryngeal nerves were affected there was anaesthesia of the entrance to the larynx, which would involve the posterior surface of the cricoid, and so might hinder deglutition. But, on the other hand, in cases of pure laryngeal paralysis, there was no dysphagia, so that anaesthesia was probably a negligible factor also in the cases under discussion. One was thus driven to regard spasm as the cause of the difficulty. Why should it not be? Spasm occurred in other parts of the body, why not in the œsophagus? How else could one account for the difficulty in swallowing in hysterical patients, or when a foreign body, too small in itself to fill the lumen of the œsophagus, caused complete blockage? Further, patients with carcinoma at the cardiac end of the œsophagus often referred their dysphagia to the cervical region, and in others with cancer at any level in the œsophagus the first symptom was sometimes sudden inability to swallow, which, after lasting a variable period, passed off almost completely. Finally, in so-called cardiospasm paresis might ultimately be shown to play an ætiological rôle, but in the meantime the old explanation of spasm as a primary cause could not be set aside. On these grounds, therefore, he considered spasm to be a common complication of œsophageal disease, and to be the probable cause of the condition to which Dr. Hill had drawn attention.

Dr. DUNDAS GRANT said this reflex spasm had been known to occur as the result of disease in the abdomen, and actually from disease of the liver. Dr. Stephen MacKenzie, years ago, published cases of the kind. Dr. Grant had had one himself, which he made the subject of a letter to the *Lancet*, when he was in general practice many years back. There was, in that case, spasm in the upper part of the œsophagus, and at that time there was difficulty in introducing a tube down the œsophagus. The spasm was not to be explained by any narrowing in the œsophagus, and the patient ultimately died with symptoms of cancer in the liver. No *post-mortem* examination was obtained. He had later a case which was sent to the London Throat and Ear Hospital in which great difficulty was experienced in passing a bougie. He referred it to Mr. Mayo Collier, who was very anxious to have cases of obstruction of the œsophagus for gastrostomy, and he found that there was cirrhosis of the liver, which seemed to have accounted for the spasm in swallowing. It appeared that spasm in the upper end of the œsophagus might occur from disease away from that locality.

Mr. WAGGETT spoke of the absence of active peristaltic action observed in some cases of malignant disease of the œsophagus.

Dr. DAN MCKENZIE, referring to the conditions mentioned by Mr. Waggett, said that the absence of the normal passive dilatation of the gullet in cases of low-lying cancer, when the œsophagoscope was inserted, clearly proved the presence of spasm. In health the gullet ballooned out when the tube had passed the superior constriction. When, therefore, ballooning does not take place—as in many œsophageal diseases—there must necessarily be spasm.

Dr. FITZGERALD POWELL said it would be interesting to know if the

paresis of the vocal cords was present before the instrument was passed. It was known that the passage of the old form of bougie had caused such paresis before. Any instrument pressing against the cricoid might cause it. With regard to spasm as a result of liver disease, he thought it might be accounted for by the fact that the veins in the cardiac end of the œsophagus were often dilated in cirrhosis of the liver.

The PRESIDENT said he had had cases of spasm of the œsophagus and functional dysphagia due not only to the cause mentioned, but also to cirrhosis of the liver. In another case, in an elderly man, it was due to trouble in the teeth. When the pyorrhœa was got rid of the spasm ceased.

Dr. HILL, in reply, said that in these cases where the dysphagia was referred by the patient to a spot remote from lesion, and, as in this case, higher up, he had (as the result of radiographic and other means of observation) been compelled to abandon the reflex spasm theory and fall back on paresis as the more probable explanation. The bougie did not help in the differentiation, because mere spasm in the deep pharynx, *i. e.* behind cricoid, could be overcome by the bougie. When the food stuck in the pharynx and did not enter the œsophagus, it was found by X-ray screen observations that there was atony rather than spasm, as there was no effort made to pull the larynx upwards and forwards and away from the spine by the muscles passing from the tongue to the hyoid bone and larynx: in genuine spasm these muscles would contract and endeavour to overcome the alleged opposing spasm of lower sphincter fibres of the crico-pharyngeus (inferior constrictor). The dysphagia, therefore, *was seen* to be due, not to an inco-ordinated spasmodic act of deglutition, but to mere paresis. The associated laryngeal paresis in these cases was also strongly suggestive of pharyngeal paresis rather than of reflex spasm. Spasm did undoubtedly occur as a secondary or symptomatic phenomenon at the site of an inflammatory stricture, or when a foreign body was impacted, but this could be demonstrated by the X rays, when reverse peristalsis would be observed. Primary idiopathic spasm and reflex spasm, where there was no adjacent lesion, had never been found by him (Dr. Hill) when really carefully looked for by radiographic and endoscopic methods of investigation, and he had, it must be remembered, performed several hundred œsophagoscopies, and he had been compelled to abandon the prevailing view which Dr. Brown Kelly subscribed to. Theoretic misconceptions had led to the general belief in sphincter spasm in the gullet; as a matter of fact there was no sphincter band to be found anywhere in the œsophagus. As regards atony, *i. e.* paresis of the œsophagus, to which Mr. Waggett had alluded, it was no doubt present as a secondary phenomenon in a dilated gullet. Collapse of the gullet, *i. e.* absence of lumen during œsophagoscopy without dilatation, pointed to tumefaction rather than to pure atony. Movements in the gullet affecting the lumen were the result of respiratory movements of the trachea and diaphragm and were also due to associated negative pressure in the lungs during inspiration. A paretic gullet with no tumefaction would open up and partially shut with respiration, *i. e.* with variations in intra-thoracic pressure, in exactly the same way as a gullet with normal tone. Absence of lumen almost invariably meant tumefaction or extrinsic pressure. He agreed with Dr. Powell that in hepatic cirrhosis there was tumefactive engorgement of the gullet and stomach, not mere spasm. He had discussed, from the evidential point of view, the question of the frequency or otherwise of primary idiopathic spasm of the gullet at the Birmingham Meeting of the British Medical Association, and had come

to the conclusion on *à priori* and on anatomical grounds and as the result of extensive endoscopic and radiographic observations, that it was usually, if not always, an error of diagnosis.

Epithelioma of the Ventricular Band in a Man, aged thirty-six.

By J. DUNDAS GRANT, M.D.

E. L.—, aged thirty-six, was first seen on September 6, when he complained of soreness of the throat with some pain in swallowing. This had started suddenly four months before, and had gradually increased in severity. The voice was husky, and there was some pain on utterance; there was a cough, which was more marked in the morning. On laryngoscopic examination there was found a moderate general infiltration of the right ary-epiglottic fold concealing the right ventricular band, and almost hiding the vocal cord; the inner aspect of the ary-epiglottic fold and posterior and outer part of the ventricular band were occupied by an irregular oval ulcer of very moderate depth, with a pale granular floor. At first sight the appearance was suggestive of tuberculosis, but its unilateral character and the absence of tubercle bacilli negated this. Wassermann's reaction was negative, and no improvement followed the administration of iodide of potassium. A small portion from the floor of the growth was removed for microscopical examination, and Mr. Wingrave reports as follows: "It is very suspicious, the epithelium being greatly thickened, irregular in size, shape and grouping. It shows a great tendency to spread inwards, and to form 'pearls.' There is also considerable lymphocytic infiltration. It may be granulomatous, but the epithelial activity is so marked that it is strongly suggestive of early malignancy." The specimen is now under the microscope, and opinions will be welcomed as to the nature of the growth, and, in case of its being almost certainly epitheliomatous, the method of dealing with it. The exhibitor's intention is to perform laryngo-fissure with the understanding that if, when this is done, he finds the growth to be too extensive to eradicate without the removal of half, or more probably the whole of the larynx, the complete extirpation is to be permitted. He is inclined to think that nothing short of this will suffice.

Mr. TILLEY said he had not seen the slide, but he had carefully examined the man's larynx, and he could not help thinking that the disease was tuberculous. If there was an ulcer on the ventricular band of malignant nature that ulcer was probably only the visible evidence of a deeper infiltration which would fix the cord more than in this case. The right cord did not seem in any degree hampered in its movements. He thought the œdema of the arytenoid was inflammatory, and that, in spite of the verdict from the microscopic slide, he believed it would turn out to be a tuberculous infection of the larynx.

Dr. JOBSON HORNE asked when the portion was removed for microscopical examination. [Dr. GRANT: Ten days ago.] It made it difficult to give an opinion at the present time, as one was now looking at the results of that trauma. One should arrive at a diagnosis of malignant disease of the larynx by eliminating tuberculosis and syphilis as factors by the usual clinical tests. Dr. Horne further suggested that transillumination¹ of the larynx in the manner he had described would be of service.

¹ "The Differential Diagnosis of Tuberculosis, Syphilis and Malignant Disease of the Larynx," *Brit. Med. Journ.*, October 12, 1907.

Dr. H. J. DAVIS regarded it as early commencing tuberculosis. The only feature against this seemed to be that the right arytaenoid did not move as easily as the left. It were easy to examine the patient, whereas in cases of malignant disease patients were, as a rule, intolerant.

Mr. TILLEY said he regarded this as pre-eminently the type of case which could be so usefully considered by the Section, and the whole value of it would be lost unless it was brought up again. He hoped Dr. Grant would, at a future meeting, acquaint the Section with the further progress of the patient.

Dr. GRANT, in reply, said the appearance under the microscope was not what one would have expected from the floor of a tuberculous ulcer, and moreover there were no tubercle bacilli. The Wassermann reaction was negative, the patient was not improved at all by iodide of potassium, and there seemed to be a great infiltration with epithelial cells. At first his diagnosis was tuberculosis. The unilaterality, along with the extent, was somewhat against tubercle and in favour of specific disease, but the Wassermann test being negative seemed to put that out of court. The ulcer was extending, and its edges were apparently beginning to be everted: the microscopical appearance, with the facts he had mentioned, appeared to leave no alternative.

Case for Diagnosis.

By W. DOUGLAS HARMER, F.R.C.S.

H. F.—, aged forty-six. History of sore throat and nasal discharge and inflammation of left eye since June, 1911. In July, when first seen, extensive pyorrhœa, profuse discharge from both nasal cavities, membranous in character. Superficial ulcers covered by adherent membrane on fauces, palate, tonsils, pharynx, lips and cheeks. Membranous deposit in conjunctival sac of left eye. Multipleshoty glands in anterior and posterior triangles of neck, also epitrochlear glands. Wassermann negative. Bacteriological examination: No diphtheria bacilli, no spirochaetes, no definite infection discovered. Shortly afterwards acute facial erysipelas developed. One month later left eye developed panophthalmitis, which necessitated evisceration. Present condition: The mouth, lips, cheeks, tongue, fauces, epiglottis and nasal passages are still affected. External sores on nose and eyelids. "Essential shrinking" of conjunctival sac. Differential count of leucocytes: Total leucocytes, 15,000. Polymorphonuclears, 77·5 per cent.; lymphocytes, 18·5 per cent.; large mononuclears, 1 per cent.; transitional cells, 2 per cent.; eosinophiles, 0·5 per cent.; basophiles, 0·5 per cent. General health fair, no diarrhœa. Patient has been seen by Dr. Adamson, who was of opinion that the lesions were either of streptococcal infection or pemphigus. On the whole he was inclined to favour the former.

Dr. H. J. DAVIS said that his first idea was that the case was one of pemphigus, but subsequent reflection modified his view.

Dr. PATERSON said that in the last year he had seen a case which made him inclined to revise his prognosis in all such cases, as that prognosis had been in the past very serious. It was a case which had gone on for three years, and in which the condition ultimately disappeared. It was true that it was confined to both cheeks, but it was very definite pemphigus of the mucous membrane of the mouth and of the epiglottis, and on one occasion he was able to see a little bulla on

the epiglottis before it burst. The case was now not only well, but there had been no sign for the last nine months. The affection did not involve the skin or the eye, and in that respect differed from the classical type.

Dr. WATSON-WILLIAMS asked what steps had been taken to determine the bacteriological condition associated with the ulcers. The appearances were so suggestive of pemphigus that he thought one could not exclude it unless there was more conclusive evidence that streptococci or staphylococci were causing the ulcerations.

The PRESIDENT remarked that he had had under his care for one and a half years an old gentleman with pemphigus, and he would be surprised if he continued to live long. He had already lost one eye from the disease, which affected the arytenoids, the epiglottis, and the sides of the fauces. Arsenic had been given, but nothing seemed able to arrest the disease. He had seen one case recover.

Mr. HARMER, in reply, said the lesions of the skin were, in his opinion, not absolutely typical of pemphigus. Dr. Adamson, who also saw the case, was of the same opinion. That gentleman considered that the skin affection was most likely streptococcic. It started in the nose, affected the throat, and then extended to the eye, which it destroyed, so that it had to be removed. The general health was now becoming affected. He proposed to vaccinate him in order to see if some improvement could be brought about. If so he would show the man again.

Tracheo-laryngostomy for Traumatic Laryngeal Stenosis.

BY WILLIAM HILL, M.D.

This girl, aged eight and a half, had been shown on April 7, 1911, an extensive tracheo-laryngostomy having been performed six weeks earlier, as the prolonged wearing of an intubation tube had failed to give permanent relief, the stenosis recurring after a few days' removal of the tube. The ostium in the neck is now considerably shorter than when previously shown, but the stenosis has apparently been cured in its lower three-fourths, *i. e.* in the crico-tracheal region—and on removal of the rubber tube the day previously there appeared to be a sufficiently patent though irregular glottic region. The patient could still breathe with the cervical ostium closed, but the glottic opening was considerably reduced as the result of leaving off the use of the rubber tube for twenty-four hours, and it would have to be replaced. It was a question whether the cervical ostium could not now be closed and a moored large intubation apparatus worn for a further prolonged period to try and effect a permanently open glottis. The alternative appeared to be to extend the laryngostomy upwards, remove redundant tissue and go on as before, endeavouring to keep the thyroid alæ widely apart with the winged rubber tube,

[Members who examined the case appeared to be about equally divided as to which was the better course; but Dr. Hill was encouraged to persevere in his endeavours to get rid of the remaining glottic stenosis by either or both methods.]

Dr. HILL said that the passage was now well open below, *i. e.* in the tracheal cricoid regions; the glottic region, however, was not satisfactory to-day, the tube having been out for twenty-four hours. The patient could breathe well yesterday with the tube out, and the ostium in the neck covered with wadding. It seemed as if it would be necessary to

resort to the tube again, and he was considering the question of further operation by thyro-fissure and extending the laryngostomy upwards before falling back on intubation.

SEVENTEENTH INTERNATIONAL CONGRESS OF MEDICINE (LONDON, 1913).

THE following are the programmes of the discussions which will take place in the Sections of Otology and Rhino-Laryngology:

IN THE OTOLOGICAL SECTION.

1. *Thursday, August 7.*—Pathology of Deaf-Mutism.
2. *Friday, August 8.*—Results of Treatment of Syphilis of the Nose, Throat, and Ear by Salvarsan and other Arsenical Compounds. (With the Section of Laryngology and Rhinology.)
3. *Saturday, August 9.*—Treatment of Non-suppurative Diseases of the Labyrinth.
4. *Monday, August 11.*—The Special Treatment of the Throat, Nose, and Ear during the active stages of certain infectious fevers, namely—scarlet fever, measles, German measles, mumps, influenza, typhoid, whooping-cough, smallpox, cerebro-spinal meningitis, erysipelas (diphtheria excluded). (With the Section of Laryngology and Rhinology.)
5. *Tuesday, August 12.*—Climatic and Occupational Influences in Diseases of the Ear.

IN THE SECTION OF RHINOLOGY AND LARYNGOLOGY.

1. *Thursday, August 7.*—The Disorders and Pathological Changes produced in the Pharynx and Larynx by the Overuse and Misuse of the Voice.
2. *Friday, August 8.*—See Section of Otology.
3. *Saturday, August 9.*—The Question of Treatment of Diseases of the Throat and Nose by Therapeutic Inoculation, exclusive of tuberculin and diphtheritic antitoxin.
4. *Monday, August 11.*—See Section of Otology.
5. *Tuesday, August 12.*—Malignant Disease of the Post-cricoid Region.

It is to be noted that on August 8 and 11 there will be combined discussions of the Sections of Otology and Laryngology.

The names of the *rapporteurs* or introducers of the discussions, who are at present under consideration, will be reported at a later date.

Abstracts.

NOSE.

- T. K. Hamilton (Adelaide).—The Treatment of Nasal Obstruction. "Australasian Medical Gazette," May 20, 1911.

Hamilton points out that in the treatment of nasal obstruction it is advisable to avoid the destruction of important structures such as the in-

ferior turbinals, and endorses the treatment of hypertrophy of the same by submucous resection of a portion of the structures. Some cases of inferior turbinal turgescence do not require operative interference; these are due to general anemia as predisposing cause, and vaso-motor paresis as exciting cause. A course of iron will effect a cure. In cases of a spur in one nostril with swelling of turbinals on both sides, the removal of the spur is sufficient to relieve both sides. The spine is the exciting cause; by causing a vacuum in one nostril it leads to increased blood-supply. As both nostrils have a common blood-supply, the turgescence of both turbinals is explained. Nasal headache is now well recognised as a distinct clinical entity. Children with post-nasal adenoids may suffer from symptoms of eye strain without any error of refraction being present. Children may suffer from marked photophobia and lacrymation from the same cause. Immediate relief follows removal of the growths. This result is partly brought about by the depletion. Nasal depletion by submucous puncture of the inferior turbinals has a diagnostic value, as it aids in differentiating cases of head pain due to nasal hypervascularity from those due to eye strain.

Young infants with snuffles and nasal obstruction are soon restored to normal by rubbing twice a day into abdominal wall ung. hyd. co. This applies to non-syphilitic cases as well as syphilitic. The surgery of the accessory sinuses is also discussed.

A. J. Brady.

Bonnier, Pierre (Paris).—Treatment of Asthma by the Naso-bulbar Route. "Arch. Internat. de Laryngol., de Otol., et de Rhinol.," March-April, 1911.

Asthma is a bulbar trouble. Between the nose and the bulb runs a large trigeminal nerve. Why not interrogate the bulb by means of the trigeminal and find its secret? The state of the larynx in nasal asthma differs from that present in both coughing and sneezing, which are of the nature of a spasmodic systole, while the former may be described as a pulmonary astyole. If in a normal subject the nasal mucosa of the external wall a little in front and above the head of the middle turbinate is gently rubbed with a probe, one encounters almost immediately a point which provokes reflex movements, quivering of the eye-lids, at other times incoherent movements of the globe, which is drawn rapidly upwards and inwards. This the author attributes to irritation of Deiter's nucleus. Chronic convulsions and nystagmus may also occur and even alterations in the pupil and occasionally troubles of accommodation. All these phenomena vary in form and intensity according to individual susceptibility, but may remain absolutely unilateral. The author found that a slight canterisation of this area is most likely to cut short an attack of hay-fever, although often momentarily exaggerating it. Occasionally the cure is permanent from the start. In approaching the head of the middle turbinate we provoke cough, and this indicates a communication with the respiratory region through its sensory or motor apparatus. The author has further demonstrated that by touching certain points of the mucous membrane of one side a bruit may occasionally be heard in the corresponding lung while the signs in the opposite organ remain unaltered. Hemorrhage thus provoked is unilateral. The author reports seventy-four cases which he has carefully followed, and on which he remarks that often muco-membranous enteritis associated with asthma disappears with this condition. In all these cases the symptoms were either immediately cured or very much diminished by canterisation. The cases include many of nasal asthma associated with

mucous-membranous enteritis, chronic coryza, intense nasal pruritus, scarlet fever, hay-fever, intense nasal hydrops, paroxysmal sneezing, habitual coryza, laryngeal thyrotomy, and even constipation associated with cedematous rhinitis.

J. D. Lithgow.

LARYNX.

Moscato.—Contribution to the Study of Congenital Stridor of Infants.
"Thesis, Paris," 1909.

This condition, although not in itself a disease, is symptomatic of various diseases. It is characterised by marked inspiratory stridor with very little interference with expiration. There may be marked drawing in of the chest, and even considerable dyspnoea, sometimes amounting to cyanosis. The acute stage passes off shortly and the condition of slight stridor remains. The condition may be sufficiently serious to bring about a fatal termination, or at least may act unfavourably upon the general health of the infant. But more frequently the infection becomes less frequent and disappears about the end of the second year after having lasted almost from birth. The stridor, although nearly always inspiratory, may be of slight expiratory advent, but it is continuous and varies in intensity in many cases. It is most marked on awaking from sleep and becomes less during sleep, on suckling, and when occupying the lateral position, when it may even disappear. Anything which calls for an increased respiratory effort, mental excitement, etc., may exaggerate the intensity of the stridor; even sudden changes of temperature may bring on such an access. The bruit persists when one pinches the nostrils or when the mouth is closed. In spite of the stridor the voice remains normal and the cry is clear. There is nothing unusual about the cough; ordinarily the stridor does not seem to produce any respiratory embarrassment. In certain cases the stridor may only last a few weeks, but in most cases, where the stridor becomes worse during the first two or three months, it remains constantly so till about the eighth month and then slowly diminishes, disappearing about the second year.

Diagnosis is usually easy. It rests on a history of the attacks having come on shortly after birth, the inspiratory bruit being more predominant than the expiratory where the latter is also present. If, at the same time that the stridor continues, the cough and voice are unaltered, and the general state is low, while auscultation reveals nothing abnormal, one can be almost sure that this condition is present. In short, onset at birth, chronic progress, and respiratory without vocal trouble are the principal characters of congenital stridor in infants.

Etiology.—In a certain number of cases the affection appears to be due to some latent or manifest parental infection, such as tubercle or syphilis. The nervous heredity has also been remarked upon as more common in boys than in girls. Hypertrophied adenoids, occurring often in newly born infants, would explain congenital stridor due to such causes. The causes may be grouped into four classes: (1) Malformations of the larynx; (2) adenoid vegetations; (3) nervous troubles; (4) compression of the trachea by hypertrophied thymus. If we turn to the results of the investigation of malformations of the larynx one sees that in these cases the vestibular orifice is contracted, the whole or part being mostly reduced to a mere chink. There is not only one variety of vestibular malformation capable of giving rise to congenital stridor, but there are at least two

—those of the type of Lees-Variot and that of the Paterson type. One should add the glottic malformations described by Semon, Lévy, and Etienne, which give rise to the same syndrome. According to Robertson Smith the presence of adenoid vegetations in the naso-pharynx produces constant irritation which brings about reflexly the production of stridor, and it seems quite evident that adenoids may produce this condition, for not only is their removal followed by amelioration or immediate cure, but in many cases of congenital stridor nothing else than adenoids can be found to account for it. Politzer was one of the first authors who attributed the stridor to nervous origin; he supposed that affections of the innervation of the muscles of the larynx due to some change in the action of the recurrences was to blame. Thomson also favours this theory. It is this that Moscoso has in view in the course of this article. In the first period, when the malformation of the larynx was not accepted as playing an important rôle in the pathogenesis of stridor, he promulgated the theory of spasm. In support of his hypothesis he mentioned the relationship which exists between stridor and stammering. The author cites a case where the stridor existed without any laryngeal malformation. In short, it seems preferable to the author to consider the stridor as the effect of malformations of the vestibule, because this is sufficient to explain the symptom without the necessity of assuming the existence of nervous alterations, but there are cases where an autopsy shows no anatomical features which can explain the stridor, and for these cases Moscoso gives the hypothesis of a nervous origin, as it is the only plausible explanation of the phenomena. Many authors have shown that hypertrophy of the thymus is the cause of certain cases of chronic congenital stridor in infants, and this may explain certain cases of stridor. No one doubts nowadays the possibility of the trachea at least being pressed upon by the hypertrophied thymus. To prove that congenital stridor is due to such a hypertrophy of the thymus it is necessary to show (1) that the hypertrophied thymus is actually compressing the trachea, (2) that this compression is the cause of the stridor. The compression of the trachea by a hypertrophied thymus no longer remains in doubt. The author cites a few cases. In almost all the operated cases one sees that the stridor disappears or diminishes when one draws the thyroid forward in its capsule, and reappears when it is allowed to sink back into its place. In short, one can say that there are incontestable cases where the syndrome of congenital stridor is produced by a compression of the trachea by the hypertrophied thymus, and these cases are not rare. Other affections giving rise to congenital stridor are hypertrophy of the thyroid body and angioma of the cervico-thoracic region (Terrien and Bodoec), ring pharyngitis (Boulard), obstetrical laryngitis (Guilbert and Cerf), enlarged thoracic glands, sometimes congenital (Geffrier). From all this it is easy to conclude that the congenital stridor of infants is not a disease, but a syndrome. It is necessary to recognise also that there are many laryngeal manifestations which can give rise to this, but there are many cases of congenital stridor where one can put the larynx out of account by examination *in vivo* and by anatomical examination, although such cases may in no way differ clinically from the others. According to Hochsinger the infants which present the type of congenital stridor have constantly an enlarged thymus, and almost always the radiogram shows considerable enlargement of this organ. Contrarily, cases where there is no stridor present the clinical examination and a radiograph show nothing abnormal. Diagnosis of stridor by laryngeal malformations can only be made by a laryngoscopic examination, which is difficult and dangerous in the case of

infants. Touch is preferable, but it is only at the disposal of persons very accustomed to its practice. It seems preferable to Moscoso to make the *diagnosis* by elimination. All the means described to establish the diagnosis of hypertrophy of the thymus itself are found difficult. Only radiography gives us definite information upon the size of the gland.

The *prognosis* of congenital stridor is bound up in the causal affection. The *treatment* will also vary in a similar way. When hypertrophied thymus is the case it is marked by crises of suffocation, which in almost all cases indicate surgical interference. According to Veau, thymectomy is a simple, easy, and efficacious operation.

J. D. Lithgow.

ŒSOPHAGUS.

Gerrado, Dr. S. (Naples).—Circular Destructive Ionisation in Œsophageal Cicatricial Stenosis. "Archiv. Ital. di Laring.," Naples, 1911, p. 5.

The author gives details of a number of cases from the clinic of Prof. Massei as well as an extended account of the work done in this field on the Continent. While some writers have obtained good and permanent results from the use of the negative pole as the active agent with a current of 3 to 5 m.a. for twenty minutes on alternate days, the author has employed 5 to 8 m.a. for ten to twelve minutes.

James Douelan.

EAR.

Yearsley, Macleod.—The Education of the Deaf. "Lancet," February 25, March 4 and 11, 1911.

From his experience the author is convinced that the whole system of deaf education in England needs thorough reorganisation on wider and more extended lines. He pays a tribute to teachers of the deaf, who are not to blame for failure under present conditions. Taking statistics of some 548 deaf children in L.C.C. schools, it is shown that 25.1 per cent. are failures at lip-reading and 30.4 per cent. are oral failures as regards articulation. After a brief sketch of the history of deaf-mute teaching in this country, the author proceeds to ask why the present system is a comparative failure, and points out that it is because education begins too late and the classification of the deaf child is defective. The needs of deaf education are postulated as (1) more scientific and comprehensive classification; (2) earlier education; (3) greater care of the deaf child; (4) encouragement of the deaf child to mix with hearing people; (5) diminution of the number of deaf children by the application of eugenic principles to congenital cases, and a better care of the ear in children.

Classification in different countries is then reviewed, and praise is given to the United States for the vast experimental work being done there in deaf education. This leads to an exposition of the author's ideas of classification, based upon the study of individual children. His scheme embraces every deaf child from the slightly deaf to the blind and mentally defective deaf-mute. Not only is earlier education advocated, but education should be prolonged, and adequate reasons are given for the latter contention.

These matters occupy two articles, the third dealing with the age at

which education should commence and the application of eugenics to deaf-mutism. Pointing out the contrasts between the disabilities of blind and deaf children in education, and commenting upon the fact that compulsory education begins at five years for the former and seven years for the latter, the inestimable importance of hearing in the physiological education of normal children is insisted upon, as also is the importance of hereditary tendencies to speech and of training the speech centres and organs of speech whilst brain and larynx are still plastic. Another point brought out is the possibility of making speech more automatic by earlier training. Actual cases are quoted in support of the author's arguments, and the work of the Garretts in America is also referred to.

The part dealing with eugenics is based upon facts gathered from a study of 691 deaf children in the L.C.C. schools, and discusses the present views as to the influences of heredity and consanguinity as causes of deaf-mutism. It urges the medical practitioner to be foremost as a teacher of eugenics, especially in cases of deaf-mute and consanguineous marriages, and the union of syphilitics, alcoholics, and those tainted with family insanity.

The main aim of these articles is to insist upon the reference of doubtful or disputed questions to the principles of physiology as the only source of safe guidance.

Author's abstract.

Spyker, S.—**Speech Defects: Modern Treatment by Vocal and Articulatory Exercises.** "New Orleans Med. and Surg. Journ.," vol. iv, p. 42.

The author groups speech defects as occurring in cleft palate, stammering, deaf-mutism, and mental deficiency.

Macleod Yearsley.

Bowen, W. H.—"Comforter" Otitis Media. "Lancet," September 9, 1911, p. 758.

The object of this paper is to express an opinion as to the origin of suppurative otitis media in babies. This opinion is that a large number of cases of middle-ear suppuration in babies results from oral sepsis introduced by the "comforter."

Macleod Yearsley.

Goldmann (Cairo).—**The Diagnosis of Hyperæsthesia or Anæsthesia of the Vestibular Apparatus.** "Arch. f. Ohrenheilk.," Bd. lxxxii, Heft 1 and 2, p. 22.

Three cases of suppuration of the middle ear with somewhat anomalous vestibular reactions are reported and the results of the reactions analysed. The chief point made is that when the caloric test, applied in the usual way, is followed by no reaction, altering the position of the patient's head may set the nystagmus going. This phenomenon indicates impairment of vestibular irritability. If on altering the position of the head no nystagmus appears, then, and then only, are we justified in diagnosing complete destruction of the vestibular organ.

Dan McKenzie.

MISCELLANEOUS.

Ehrler, Wolfgang.—**Dangerous Local Reaction in Cases of Lesions of the Upper Respiratory Tract after Salvarsan.** "Monats. f. Ohrenh.," Year 45, No. 9.

CASE 1.—A man, aged eighty-two, cough and dyspnoea for some time

past, infection denied, Wassermann positive, mucous membrane of the larynx extremely red and swollen, diffuse gummatous infiltration of the epiglottis. As no improvement followed local treatment and iodide of potassium internally an intra-venous injection of 0.5 gr. of salvarsan was given. The dyspnoea became so threatening in the course of the next few days that the patient was admitted to hospital and tracheotomy eventually found necessary.

CASE 2.—A man, aged forty-two, under treatment in 1904 for mercurial stomatitis, applied for relief December 17, 1910, with a small ulcer on the base of the uvula and another on the tonsil. Sajodin, local treatment, healing. At the beginning of January, 1911, another ulcer had appeared on the uvula and tongue, Wassermann strongly positive. January 26, intra-gluteal injection of salvarsan, 0.6 gr. Healing by February 4, but within three weeks a jagged perforation of the hard palate had occurred close to the base of the uvula.

CASE 3.—Congenital syphilis in a boy, aged fifteen. Under treatment many years. Tracheotomy in 1907 for specific stenosis of the larynx. In 1909 large gummata on the skull and right humerus. In October, 1910, the patient applied for treatment with a dirty ulcer the size of a florin in the pharynx. Intra-gluteal injection salvarsan 0.3 gr. under which healing took place. January 14, 1911, patient came again with periostitis of the bridge of the nose. Intra-venous injection of salvarsan 0.3 gr. During the next four weeks an energetic inunction was carried out and the periostitis partially subsided. Four weeks later still severe keratitis in the right eye and a slight degree also in the left; nasal periostitis still present but better. Wassermann strongly positive.

CASE 4.—A man, aged thirty-seven, acquired lues in 1898. Six mercurial injections in 1906. Applied for treatment February 2, 1909, stating that he had been unable to see with left eye for ten days and with right eye for two days. Complete double optic atrophy, saddle nose, perforation of the septum nasi. Treatment by inunction. December 10, Wassermann positive, intra-muscular injection salvarsan 0.6 gr. Meningeal symptoms appeared in the middle of the following January and he died of meningitis January 26, 1911. (The author considers the optic atrophy and meningitis followed on disease of the sphenoidal sinus in this last case, which condition the salvarsan aggravated, though how he arrives at this conclusion is not quite clear, nor does it seem fair to accredit the drug with the unfavourable course of events in the two preceding cases.)

Alex. R. Tweedie.

REVIEW.

Der Schwindel (Vertigo). Von Geh. Med. R. Prof. Dr. E. HITZIG, Zweite Auflage. Herausgegeben und Bearbeitet von J. RICHARD EWALD und ROBERT WOLLENBERG. Mit 12 Abbildungen. Pp. 114. Wien und Leipzig: Alfred Hölder, 1911. Price 6.50 marks.

Originally the work of the late Dr. Hitzig, this book on vertigo has been brought up to date and largely rewritten by the present authors, Drs. Ewald and Wollenberg. Respect for the memory of Hitzig has led to the retention, in the physiological section, of as much of the

original text as is compatible with modern views and advancing knowledge. The resulting mixture has certainly been skilfully compounded, but nevertheless, the impression left on the mind after reading the book is that a bolder break with tradition would have been perfectly justifiable.

The subject is dealt with from the two standpoints of physiology (Ewald), and pathology (Wollenberg), and in both sections most of the recent work and opinion is compendiously displayed.

In his exposition of the theory of canalicular vertigo and nystagmus, Ewald endeavours to avoid the difficulties of Breuer's theory of a free circulation of endolymph round the canals during and after rotation, by attributing ciliary action to the hair-cells. The trend of the fluid [the difference is the difference between a wave and a current.—D.M.] in one or other direction is supposed to hinder or facilitate the movement of the cilia, and a corresponding nerve stimulus is thus initiated. Further, the stimuli uninterruptedly generated by the placid normal ciliary movement is held to be responsible for the general muscle-tonus of the body.

In the matter of the theory of caloric nystagmus the author agrees with many other observers in referring the reflex to the direct action of the cold or heat upon the end-organ, and not, as Bárány does, to changes in the circulation of the endolymph effected by thermal influences.

On page 22 Bárány is credited (or debited) with the belief that both phases of the nystagmoid movement originate in the labyrinth. But the charge is surely not well founded, for Bárány, like most other investigators, holds that it is the slow phase alone which is generated in the labyrinth, and that the rapid phase is brought about by the intervention of nerve-centres higher in the brain than those which transmit the vestibular impulses direct to the motor centres for the eyes.

Another slip, in the pathological section (p. 75), that caloric nystagmus, whether induced by cold or heat, is directed to the "unsyringed ear," will doubtless be rectified in future editions.

For the otologist the book will serve as a useful reminder that vertigo is common in many diseases other than those of the ear. But in respect to aural disease he will be disappointed to find that the ever-interesting topic of the "labyrinth storm," or Ménière syndrome, is only glanced at, the reader being referred to V. Frankl-Hochwart's monograph on the subject.

These criticisms, of course, apply only to what appear to be the deficiencies in the work. Taken all round it is accurate, and not too abstruse, and well deserves a place in the library of all who are interested in the fascinating problem of vertigo.

Dan McKenzie.

OBITUARY NOTICE.

PROFESSOR BERNHARD FRÄNKEL.
(Berlin.)

WE regret to announce that the *doyen* of German laryngology, Professor Bernhard Fränkel, a laryngologist whose reputation and renown are world-wide, died on November 12, 1911, a few days before his seventy-fifth birthday.

The son of a medical man, Fränkel was born at Eberfeld, November 17, 1836. His student life was passed at Würzburg and Berlin under Joh. Müller, Traube, Langenbeck and Virchow, whose teaching and

character made a life-long impression upon him. In 1859 he obtained his Doctorate of Medicine and in the following year he passed the State examination. The great wars of 1864, 1866, and 1870-71 found Fränkel in the battle-field, and in the last-mentioned campaign he won the coveted honour of the Iron Cross. After that war he became a Privat-Dozent in Berlin, and from 1879 to 1888 held the posts of physician to the Augusta Hospital and teacher to the nursing staff of the Royal Charité. In 1884 he received the title of Professor, and in 1887 he was appointed Professor Extraordinary and Director of the University Polyclinic for Diseases of the Nose and Throat. In 1893 the first clinic for diseases of the throat in Prussia, that of the Charité was formed with Fränkel as its director, and two years later the distinction of Privy Medical Councillor was conferred upon him. In the same year (1895) he was made Honorary Professor Ordinarius of the University of Berlin. In 1901 he was nominated full Professor to the Kaiser Wilhelm Academy. As our readers are doubtless aware, Fränkel on retiring from the University Chair had the satisfaction of seeing Professor Killian appointed as his successor.

Fränkel was an excellent teacher, a born orator and a lucid writer. From first to last a zealous contributor to laryngological literature, he rendered the speciality a notable service when he established our highly respected and valuable contemporary, the *Archiv für Laryngologie*. In addition to his labours in advancing the scientific standing of laryngology, Fränkel took a keen interest in its public affairs and fought manfully for its recognition and independence.

The happy amalgamation of the old-established "Verein Süd-deutscher Laryngologen" with the younger "Deutsche Laryngologische Gesellschaft" was largely brought about by Fränkel's energy and tact aided by the good will of both contracting parties.

One of the last public duties he performed was that of President of the Third International Laryngo-Rhinological Congress at Berlin in August, 1911, where many of us had an opportunity of seeing him exercise the functions of the office with considerable decision and distinction.

Fränkel's death is mourned not only by laryngologists but also by the medical world in general, for he was one of the protagonists in the now universal warfare against tuberculosis, and his great efforts in this field of activity were gratefully recognised in the speeches delivered on the occasion of his funeral.

BOOKS RECEIVED.

- The Accessory Sinuses of the Nose in Children.** 102 Specimens Reproduced in Natural Size from Photographs. By *Prof. Dr. A. Onodi*, with a preface by *Prof. Dr. W. Waldeyer*. Translated by *Carl Prausnitz, M.D., M.R.C.S., L.R.C.P.* London: John Bale, Sons & Danielsson, Ltd. Würzburg: Curt Kabitsch, 1911. Price 21s. net.
- Atlas of Killian's Tracheo-Bronchoscopy.** - Coloured Plates Representing Pathological Preparations from Cases Examined during Life by means of Tracheo-bronchoscopy. By *Sanitätsrat Dr. Mann*. Translated by *Thos. Guthrie, M.B., F.R.C.S.* London: John Bale, Sons & Danielsson, Ltd. Würzburg: Curt Kabitsch, 1911. Price 22s. net.

THE
JOURNAL OF LARYNGOLOGY,
RHINOLOGY AND OTOTOLOGY.

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THE EDUCATION OF THE SPECIALIST IN LARYNGOLOGY,
RHINOLOGY, AND OTOTOLOGY.

SINCE Dr. P. Watson-Williams in his Presidential Address at the opening of the Session 1910-1911 of the Laryngological Section of the Royal Society of Medicine¹ raised the question of the education of the specialist in our particular department, interest in the subject has been rapidly growing in depth and volume both at home and abroad.

It has already formed the theme of an interesting debate in the American Laryngological, Rhinological, and Otological Society,² and, if rumour speaks truly, the subject will also come up for discussion in the Laryngological Section of the British Medical Association in the present year at the forthcoming meeting at Liverpool.

In order that our readers may have an opportunity of learning how much or how little time is at present spent in the special education both of the medical student prior to graduation, a point to which Dr. W. Milligan drew attention some years ago, and also of the medical practitioner who intends to devote the whole of his energies to oto-laryngology, we have arranged for the publica-

¹ JOURN. OF LARYNGOL., RHINOL., AND OTOL., vol. xxv, p. 619.

² *Ibid.*, vol. xxvi, p. 653.

tion of a series of articles upon the subject, written by representative specialists of the most important countries of Europe and America. The first of these articles, by Dr. Tetens Hald, dealing with Denmark, appears in the present issue, and we hope to be able to publish the others in regular monthly series during the year.

THE TEACHING OF OTOTOLOGY AND LARYNGOLOGY IN DENMARK.

BY P. TETENS HALD, M.D.,

Privatdocent in the University of Copenhagen; First Assistant Surgeon,
Ear and Throat Clinic, Kommunehospitalet, Copenhagen.

IN Denmark the specialty of oto-laryngology is still striving for full recognition on the part of our University authorities. But very considerable progress has been made towards the desired goal since the days, not very long ago, when one of our leading medical journals maintained that it would not do to place beds in the planned new university hospital under the care of otologists, because it was not right to "tempt" these to perform such major operations as may become necessary in consequence of ear troubles.

Since 1906 the medical student must produce at his final examination a certificate of his having followed the oto-laryngological course provided by the university. This course consists in clinical demonstrations, exercises and theoretical lectures delivered by the university lecturer on oto-laryngology, and its length is three hours weekly for about sixteen weeks. There is no special final examination, but still the student is obliged to entertain a somewhat more than platonic interest in our specialty, as questions appertaining to the domain of otology have been set down as themes for the written examination in surgery, and otological cases may be given him for his oral clinical examination. It is, however, a sign of the Cinderella position still accorded to our specialty, that it has not been esteemed necessary to appoint to a professorship proper the instructor in oto-laryngology and the director of the oto-laryngological clinic of the university hospital ("Rigshospitalet"); he and a few others amongst the most prominent of the specialists have been personally honoured by being nominated "titular" professors.

As soon as the practitioner, on passing his final examination, has obtained the *jus practicandi*, he may, if he so decides, set up as a

specialist, there being no special examination or official standard maintained for the assumption of this denomination. However, very few, if any, instances of such crude pseudo-specialism are to be found in our specialty. Nearly all recognised specialists (*i. e.* recognised by the profession at large) have combined in a society, the "Dansk Oto-laryngologisk Selskab," the membership of which is open only to those medical men who, after having been proposed by a member on two consecutive meetings, obtain four-fifths "ayes" in the secret voting. In a certain sense, therefore, the specialists can be said to determine themselves to whom they will accord the *cachet* of specialist; but hard and fast rules for the acceptance have not been laid down, and attempts to do so have conspicuously failed.

As to the hospital appointments, a distinct difference obtains between England and Denmark. Our hospitals are mostly supported by the different municipalities, two by the State; a few are run on voluntary contributions on the part of the Roman Catholics. The superior medical officers on the last-mentioned institutions are, to my knowledge, not salaried, but in the first-named a salary is paid to all on the medical staff from the director downwards, in our specialty up to £165 per annum. The directors and assistants of the different clinics are appointed by the authority which supports the hospital. If an appointment as director of a clinic

Oto-Laryngological Clinics in Denmark.

Town.	Name of hospital or institution.	Supported by.	Director.	Number of assistants.	Salaried.	Out-patients.	Number of beds.	Teaching.
Copenhagen	Garnisons-hospital	The State	Hempel	1	Yes	Yes	<i>Cir.</i> 20	No
"	Kommune-hospital	The Municipality	Mygind	3	"	"	Ditto	Yes
"	Rigs-hospital	The State	Schnieggelov	3	"	"	17	"
"	St. Josef's Hospital	Voluntary contributions	"	2	The assistants only	No	<i>Cir.</i> 25	No
"	Polikliniken for Ubemidlede	Contributions from different sources	Saxtorph-Stein, Bentzen	2	Ditto	Yes	None	Yes
"	Frederiks-berg Poliklinik	Ditto	Möller, Buhl	2	No	"	"	No
Copenhagen	St. Josef's Hospital	Voluntary contributions	Schousboe	—	"	None	<i>Cir.</i> 10	"
Aarhus	Ditto	Ditto	Jacobsen	—	"	"	8	"

Furthermore, most of the other hospitals have otologists attached to their staff as consultants.

becomes vacant, any actual or late assistant in any of the clinics may apply for it after due publication of its vacancy.¹

There is only one university and medical school in Denmark, that of Copenhagen. In our specialty teaching is carried on in a few places besides in the university clinic (see the table). Theoretically all medical men in possession of the university degree of M.D. (equivalent to the "Privatdozent" of Germany) are teachers *in posse*, as thereby they acquire the *venia docendi*, the right of teaching publicly in the university, and several of them actually do act as teachers. Special degrees or diplomas for the throat and ear do not exist. Like our whole medical education the teaching in our specialty is gratuitous, no fees being paid by the students.

IDIOPATHIC SPASM OF THE ŒSOPHAGUS AS A COMMON DIAGNOSTIC ERROR.²

By WILLIAM HILL, B.Sc., M.D.,

Surgeon for Diseases of the Throat, Nose and Ear at St. Mary's Hospital, London.

TRUE spasm of the gullet due to organic disease of the nervous system, such as is believed to occur in tetanus, hydrophobia and strychnine poisoning, is admittedly a rare condition. On the other hand, functional spasm is generally held not only to be a common malady, but to be in many instances the *causa causans* of secondary lesions of a gross character.

Thus at the December meeting of the Laryngological Section of the Royal Society of Medicine, Mr. Gay French showed a remarkable case of tight stricture of the lower end of the œsophagus, which was impermeable to the passage of either a small or large bougie when the attempt was made under most favourable conditions—viz. by the aid of a direct œsophagoscopic tube under local anæsthesia. The dilation of the gullet was probably one of the largest on record which had been brought forward for endoscopic inspection *in vivo*, and Mr. French asked whether the condition, then admittedly organic, had been purely spasmodic *in origin*; and the majority of those who joined in the discussion saw

¹ According to the ethical code of the Danish Medical Association no member of the Association can accept a hospital appointment the vacancy of which has not previously been publicly announced.

² Read at the Birmingham Meeting of the British Medical Association, July, 1911.

nothing improbable in that suggestion, and in fact many strongly defended the accepted views regarding primary gullet spasm. There were, however, two dissentients; Dr. Jobson Horne and Dr. Fitzgerald Powell generally supported my deliberately dogmatic pronouncement, "that purely functional tonic spasm of the gullet, not associated with inflammatory tumefaction, was a condition often heard of, but never seen."

We are asked to believe that a primary, *i. e.* idiopathic, spasm of unstriped muscle limited to a specially weak area of the œsophageal musculature in the region of the cardiac orifice can be the seat of such a degree of primary spasm, whether functional or due to an organic irritative lesion of the pneumogastric nerve either central or in continuity, as to give rise in course of time to hypertrophic stenosis, and subsequently to such marked constriction of the œsophago-gastric junction as to lead to an enormous dilatation of the gullet. One can admit the possibility of organic paresis eventuating in pronounced post-paralytic contracture, but functional paresis (which, in my opinion, is the usual lesion in true functional dysphagia affecting the œsophagus) is most unlikely to lead to contracture and other organic changes. The supporters of the spasmodic theory not only postulate a marked spasm at a point where the musculature is very weak, but they also postulate an extremely *limited* primary spasm which is either tonic or clonic, and they further postulate that this alleged spasm in course of time leads to permanent organic changes culminating in a tight stricture and dilatation of the gullet above it. As far as my endoscopic and radiographic observations on the œsophagus go, *spasm of a really unyielding nature* is not found even when some spasm admittedly exists as a secondary complication—that is, when it is either symptomatic, as in tumefaction with ulceration, or in the rarer instances of reflex spasm. And further, as regards alleged limited primary spasm in the gullet sufficient to lead to definite dysphagia, not only have I never found any œsophagoscopic or radiographic evidence of its existence, but I have not even heard of any testimony sufficiently plausible to lead me to consider the conclusions of others as at all convincing. Inferences drawn from radiography alone, *i. e.* unchecked by œsophagoscopy, are obviously inconclusive.

The musculature of the œsophagus, of course, contracts in the usual peristaltic manner obtaining in the alimentary tract generally; and the waves of contraction may be regarded as a series of spasms; and apparently a gemine intermittent spasm, which, however, is

not of the nature of a reverse peristalsis, takes place in the region of impaction of a portion of vegetable or animal food, or of any foreign body which proves to be too large to pass down the gullet with ease; but ordinary or even exceptional peristalsis is quite different to a long-continued state of clonic or of tonic spasm of a limited area in the œsophageal circular-fibre musculature sufficient to lead to marked dysphagia, and later to permanent contracture and to subsequent great dilation of the viscus above the stenosed region.

The modern supporters of the spasmodic theory do not claim that either clonic or tonic obstructive spasm often occurs as a primary eccentricity in the continuity of the gullet generally—the œsophagismus of the old authors; on the contrary they for the most part stake out a claim for this phenomenon in two special areas only—namely, at the mouth, and at the end of the gullet. In each of these positions they assume the presence of a sphincter muscle. Thus Guisez, in his new work on “Diseases of the Œsophagus,” writing on “Primitive or Idiopathic Spasm,” uses the French equivalent of these words: “The existence of circular fibres at the initial and terminal portions of the gullet leads us to look upon them in these regions as two veritable sphincters which close, the one the entrance to the œsophagus, and the other the cardiac region—the cervical sphincter and the cardiac sphincter. These two regions, then, one conceives to be the seat of predilection of spasm of the œsophagus.” The expression, “one conceives,” somewhat weakens the statement, it is true; but Guisez proceeds to back up this view by reference to eighteen cases of organic stricture of the lower end of the gullet assumed to be spasmodic in origin, and to eight cases of pharyngeal stricture.

Dr. StClair Thomson also, in his recent book entitled “Diseases of the Nose and Throat, Comprising Affections of the Trachea and Œsophagus,” gives some countenance to the conception of idiopathic spasm. The first sentence on this subject reads: “Spasmodic contraction of the superior sphincter of the œsophagus occurs in functional dysphagia,” and a few lines further on he writes: “The chief symptom is dysphagia; if the gastric sphincter of the gullet is affected regurgitation will also occur.” The presence of the “cervical” and of the “cardiac sphincter” of Guisez are referred to as the “superior” and the “gastric sphincters” of the œsophagus, so that StClair Thomson and Guisez, the most recent writers on this subject, are here in substantial agreement with the views handed down on authority (*e.g.* Gottstein, Kraus, Mikulicz, Stark, Von Hacker, Killian, etc.).

Now I have previously asserted that at the upper region and at the extreme lower region of the œsophagus the circular-fibre musculature is weak, and if anything rather weaker than elsewhere. This anyone can discover for himself. Let me quote in corroboration from an anatomist who is much less reticent on these points than writers in most anatomical works. In his "Text-book of Human Anatomy," in describing the coats of the gullet, Professor Macalister details:

(1) The adventitia.

(2) Longitudinal fibres, a *thick* red stratum consisting for the upper third mostly of striped fibres, etc.

(3) A *thinner* layer of circular fibres, some of which are striped in the upper fourth; the bands are mostly oblique, but are "more transverse at the upper fourth, the fascicles being closed loops. A few of these fibres appear as if continuous with the inferior constrictor."

Later, in describing the musculature of the stomach, he mentions the deep oblique series of fibres "which are continuous with the circular fibres of the œsophagus," these latter, as we have seen, being themselves "usually oblique," so that according to Macalister's description there is nothing in the shape of an aggregation of circular fibres forming a sphincter-like ring at the cardia. His precise statement on this point reads thus: "There is no special muscular sphincter at the cardiac end, the lower end of the œsophagus gradually expanding in a funnel-shaped manner to the stomach, but the muscular œsophageal opening in the diaphragm, and the normal closure of the œsophagus itself, obviates the need for such an arrangement." By the expression "normal closure of the œsophagus itself," he really means the normal closure of the lower or phreno-cardiac portion of the œsophagus, for the thoracic œsophagus is normally open, as every œsophagoscopist knows.

Such, then, are the pronouncements of an anatomist of the first rank, and every statement is capable of verification, and has been verified. The cardiac or gastric sphincter is a fiction. The truth as to the inverted funnel-like shape of the subphrenic portion of the gullet can be verified by Rovsing's method of lower or laparogastrosomy with a cystoscope in a patient who has been gastrotomised for another purpose. Even Jackson is careful to explain that by the term "cardio-spasm" he really means spasm occurring in abdominal œsophagus "between the cardia and the hiatus." And he further states that "the cardia is not a genuine sphincter, though Hyrtl has demonstrated circular fibres." Jackson only

claimed to have seen up to 1907 three cases of cardiospasm, and two of these, he admits, were associated with local ulceration. Guisez's eighteen cases are unconvincing. Gottstein, writing in "Keen's Surgery" under the heading "Cardio-spasm," loosely uses the term as synonymous with non-malignant phreno-cardiac stenosis, and gives pure spasm as *one of six* conditions contributing to its production, the other five being definite organic lesions.

It will perhaps be pointed out that Guisez and Thomson and the many others who hold similar views have some real anatomical authority for claiming a superior or cervical sphincter of a very genuine character, however flimsy their case may be for a cardiac or gastric sphincter and for cardio-spasm. I shall be asked, What about the lowest or fundiform fibres of the crico-pharyngeus, which Killian and Keith have considered to be the sphincter of the mouth of the œsophagus? Here I submit that I have no case to answer, as I am not dealing with alleged idiopathic spasm of the pharynx. The lowest or fundiform band of fibres of the crico-pharyngeus is, as the terminology unequivocally proclaims, absolutely and entirely pharyngeal. The muscle is part and parcel of a definite muscular bag—the pharynx. Anatomical divisions are of course often largely artificial, but there is a very definite distinction between the musculature of the pharynx and that of the gullet, and the change in character is sufficiently definite and marked to justify the delimitation of the alimentary tract at the lower border of the inferior constrictor muscle into pharynx above and œsophagus below.

I am not here concerned whether spasm of the lower or fundiform fibres of the crico-pharyngeus is often a cause of functional dysphagia or not, for any way that would be a question of isolated pharyngeal spasm and not of œsophageal spasm. Neither am I concerned with the claim that this portion of the crico-pharyngeus acts as a sphincter, but admitting that it probably is a sphincter, that is quite beside the question under discussion, for it obviously closes the deep pharynx and not the œsophagus. It appears to be quite unnecessary to have a double door here, and the single door at the termination of the pharynx acts as a potential door to the œsophagus doubtless, but why it should be deemed desirable to annex a portion of the pharynx to the gullet, as Killian and Keith propose, I am at a loss to understand.

Most writers on the gullet appear to have but ill-defined notions of where the pharynx ends and the œsophagus begins; some clinicians place it as high as the level of the arytenoids

others at the upper border of the cricoid, others again as far down as the level of the junction of the middle and lower thirds of the cricoid plate (Killian and Keith). But the lower margin of the inferior constrictor muscle of the pharynx is as far down as the lower border of the cricoid ring, and it is at this level that the pharynx ends and the gullet begins. Jackson, Guisez and others, in representing the endoscopic picture of the collapsed lumen of the upper end of the œsophagus as a transverse slit, have mistaken the middle of the post-cricoidal pharynx for the mouth of the gullet.

There is another point which I may be expected to deal with, and that is with what Chevalier Jackson calls "phreno-spasm," that is with spasmodic closure of the œsophagus opposite the hiatus œsophagus by spasm of the adjacent fibres of the crura of the diaphragm. This extrinsic spasm he is careful to differentiate from true intrinsic gullet-spasm at the level of the diaphragm, *i. e.* at the phrenic constriction. The phrenic constriction is, as has been previously said, one of the narrowest parts of the gullet. Most writers have assumed that the narrowest part of gullet, or at all events the part of the lower region most frequently concerned with spasmodic and inflammatory stricture, is the cardiac orifice. With Guisez it is always "cardiac constricture," "cardiac spasm," etc.; he even sketches what he has seen in this region, but we hear nothing from him of the really narrow part of the gullet—the constriction that every œsophagoscopist is familiar with, and that is, the phrenic constriction which confronts one each time one passes the œsophagoscope low down. Guisez has probably mistaken this region for the cardiac orifice, as shown by his descriptions. This, the phrenic constriction, is *the* spot of predilection for stenotic conditions. Chevalier Jackson is more accurate in differentiating between phrenic and cardiac stenosis, but I am unable to confirm his findings as regards primary spasm of the phrenic constriction of the gullet itself; that is quite apart from the "phreno-spasm" mentioned above.

I will again quote a statement of Macalister's. Dealing with the *hiatus diaphragmaticus* he writes: "The œsophageal opening is an oval hole bounded on each side by the fleshy fasciculi passing from the crura to the central tendon . . . being muscular it may vary in diameter, and when contracted its margins constrict the œsophagus, which is only united to the borders of the opening by loose areolar tissue." Now here we have a narrow part of the gullet where it is usually closed, the indication of the lumen appear-

ing sometimes as a puckered dimple and sometimes as an oblique longitudinal slit, and this very constricted part of the gullet is bounded laterally by prominent bands of extra-œsophageal striated muscle.

In making the spasmodic theory a present of this further set of anatomical facts in reference to the phrenic constriction of the œsophagus and the crura of the diaphragm, I cannot pretend that it is of any value, for there can be no question of the presence of a genuine sphincter at the level of the diaphragm, but merely of a potential sphincter, as the crura are not incorporated in the gullet, and an extra-œsophageal spasm of certain fibres of the crura to the exclusion of the rest of the diaphragm, that is to say, without hiccough and without radiographic confirmation, must be somehow demonstrated before such limited "spasm" can be acknowledged.

Having challenged on a former occasion¹ the alleged frequency of idiopathic or primary spasm of the œsophagus on the ground of radiographic and endoscopic observations, and having dissented from the observations and interpretations of others on clinical grounds alone, I have now endeavoured to show the untenable character of the primary spasm theory from a different standpoint, viz. on anatomical and on *a priori* grounds.

In conclusion, I have no hesitation in stating that functional dysphagia is usually due to pharyngeal *paresis*, rarely to pharyngeal spasm; there may occasionally be concomitant paresis of the gullet, in other words, weak peristaltic action, but pure primary spasm of the œsophagus, whether functional or organic, is in my opinion and experience "often heard of but never seen." Instead of idiopathic spasm of the gullet being usually the first explanation thought of in a case of where food sticks within the thorax, it ought to be the last. If the difficulty in swallowing is truly functional, it is probably due either to pharyngeal paresis, or to want of co-ordination of the muscular movements of deglutition, but if the difficulty is really located purely in the œsophagus the presumption is that an organic lesion will be found if sought for. In a large proportion of cases where I have subsequently found either acute or subacute œsophagitis, cicatricial stricture, peri-œsophageal abscess and carcinoma, I have ascertained that the condition has been confidently diagnosed in the first instance as spasm by one or more medical men.

I regret that time prevents me dealing with the aetiology of

¹ *Proc. Roy. Soc. Med. (Laryngological Section)*, p. 36, January, 1911, and p. 25, December, 1911.

functional paresis, primary and secondary, tumefactive changes, kinking of the phreno-cardiac portion of gullet, and also with gastritis, gastric ulcers and other possible factors in the evolution of slight chronic œsophagitis to begin with, but leading to marked degrees of phreno-cardiac stenosis at a later stage. We have here a fertile field for exact observation, careful inquiry and intelligent research.

DISCUSSION.

DR. BROWN KELLY (Glasgow) did not agree with Dr. Hill, and considered that spasm of the œsophagus was easily excited. This was evident, for instance, from the manner in which the gullet contracted around a foreign body, which in itself might be much too small to cause obstruction, but owing to the spasm set up by its presence produced complete closure, sometimes lasting for days. If Dr. Hill denied the occurrence of spasm of the gullet, how did he account for those cases in which the patient died of starvation owing to dysphagia, and at the *post-mortem* examination no stricture—and certainly no malignant disease—was found at the cardiac end. The attitude assumed by Dr. Hill in regard to this question was opposed to that of observers such as v. Mikulicz, Gottstein, Starck, v. Eicken, and Guisez. The speaker's experiences tended to confirm the views of these and other writers as to the existence of cardiospasm.

DR. W. JOHNSON HORNE (London) agreed with the opinion which had been expressed that care should be exercised in the application of the term idiopathic, or functional, to cases of dysphagia due to œsophageal spasm. He called to mind a case of malignant disease of the œsophagus which not many years previous to death had been relieved by the passage of œsophageal bougies, and in consequence had been diagnosed as a case of œsophageal spasm.

Remarks were made also by THE PRESIDENT, DR. DAN MCKENZIE, DR. GRANT, and DR. PEGLER.

DR. HILL, in reply to Dr. Brown Kelly, said that if he took up a "superior attitude" it was at all events based on superior anatomy, whilst many of the authorities relied, in his opinion, on unproved anatomical "conceptions." Sphincter spasm was a misnomer where no sphincter existed. It was quite time that all this loose talk in reference to œsophageal spasm should be shown up for what it was worth. If his (the speaker's) contentions were to be seriously challenged, a stronger argument than a mere appeal to the opinions of authorities should be forthcoming. Dr. Dan McKenzie in his remarks had with obvious diffidence fallen back on what was very generally regarded as the parallel instance, viz. of alleged pyloric spasm leading to hypertrophic stenosis; the regions were not, of course, homologous, and the analogy was certainly a false one, for at the pylorus there was a genuine sphincter, but even so it had never been satisfactorily shown that alleged idiopathic pyloric spasm culminated in hypertrophic stenosis. Surgical explorations and endoscopic examinations in the alimentary and in the genital tracts tended to demonstrate that conditions formerly assumed to be due to mere spasm alone were really associated with organic lesions. A stricture which under combined local and general anæsthesia, was œsophagoscopically evident, and demonstrated by endoscopic bougieing, was certainly not purely spasmodic either in nature or in origin. The argument that dysphagia cured by bougieing must be

proof that it was due to œsophageal spasm was simply puerile in the speaker's opinion. That paresis and inflammatory tumefaction could be successfully treated by bougieing was well established in various regions, whereas the mechanical stimulus of a bougie in true spasmodic conditions, as for instance in vaginismus, was more calculated to induce spasm than to cure it. The *post-mortem* findings in cases of dilated gullet with tight phreno-cardiac stricture during life, where a finger could easily be passed from the opened stomach through the stricture into the gullet, was no proof that the obstruction was due to spasm, for in two malignant cases of his own, examined *ante-mortem* and *post-mortem*, where endoscopic bougieing from above was unsuccessful, and suggested a tight stricture, and where the finger was easily passed from the stomach, at the gastrostomy it was quite clear that the obstruction was due to kinking of the phreno-cardiac portion of the gullet as its junction with the stomach, the dysphagia being aggravated doubtless by paresis and œdema. The case mentioned by Dr. Pegler was obviously one of organic stricture which, as was usually the case, had been wrongly attributed to spasm in the first instance. He (the speaker) had been endeavouring for some years to find a genuine case of primary spasmodic stricture of the gullet, and his failure could scarcely be attributed to inexperience or want of material to work upon. He believed the condition, instead of being a common one as generally taught, was one of the greatest rarity, and his object in making this communication was to induce others to investigate for themselves unbiassed by authority.

SUBMUCOUS RESECTION OF THE NASAL SEPTUM: AN ANALYSIS OF 130 CASES.¹

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CONCERNING the general question of the utility and safety of the submucous resection of a deviated nasal septum in properly selected cases there can be no dispute. This paper deals only with certain details in regard to the operation and its results.

Indications for Operation.—The operation is, of course, most frequently performed for the relief of nasal obstruction arising from deflections, outgrowths, or spurs of the septum. Ninety-one of my cases were operated on for this reason.

In addition to nasal incompetence sufficiently disturbing to lead the patient to seek relief from this disability, the operation may be necessary in cases where the secondary effects of the nasal obstruction are more striking than their initial cause. Seventeen of my cases fall into this group. Seven of these were cases of

¹ Read at the Birmingham Meeting of the British Medical Association, July, 1911.

chronic laryngeal catarrh, more or less severe, all of which were materially benefited by the operation. In one case suffering from laryngeal tuberculosis the restoration of nasal patency by the operation was followed by a surprisingly good effect upon the laryngeal disease. Four were cases of chronic catarrhal deafness, two of which were improved by the operation, while two received no benefit. Three patients were operated on for the removal of the annoyance of "dropping mucus" in the back of the throat; one was cured and the others remained as before. One case of anosmia was operated on with a negative result.

We are generally warned to abstain from the septal operation in cases of atrophic rhinitis, and I admit that this teaching is, as a rule, sound. But when the atrophic disease is found affecting only one side—the widely open side—of a nose with a deflected septum it may be worth while to depart from the rule. At all events, in the solitary case of this kind in which I performed the operation the atrophic disease rapidly got well.

There are other indications for the operation besides obstruction, less common, no doubt, but, when they are present, not any less cogent.

In eight of my cases a deviated septum was straightened in order to permit free access to the antrum, the ethmoidal, or the sphenoidal region, so that a polypus-bearing area might be efficiently curetted or drainage provided for the discharging cavities. The frequency with which sinus suppuration and polypus formation are found on the stenosed side of an asymmetrical nose suggests a causal connection between the deflection of the disease, which, of itself, is, perhaps, sufficient justification for the operation. In none of these cases did the presence of sinus suppuration induce septic infection of the septal wound area. A rare indication for the operation existed in one case where a septal deflection hindered the surgical removal of a congenital occlusion of a posterior naris. It may be remembered in this connection that recourse to septal resection as the first step in a more extended surgical procedure has recently been had by Hirsch, of Vienna, in selecting the septum as the route of approach to the region of the pituitary body inside the cranium.

Turning to the removal of possible causes of reflex irritation by septal resection, I find eleven cases, six of which were cases of asthma. Of these one obtained complete relief from his attacks, a relief which still continues, two years after his operation; one remained free of asthma for eight months and then relapsed, though

the attacks were less severe; two reported themselves "improved" by the operation; and in two it has done no good whatever.

Three cases were operated on for headache; two were cured and one remained unaffected.

Two cases were operated on for paroxysmal rhinorrhœa, and both were greatly improved.

It is, perhaps, necessary to say that in all these cases of presumably reflex irritation the condition of the septum was sufficiently abnormal to suggest that circumstance as a likely starting-point of the reflex irritation.

In two cases the septum was resected for quite extraordinary reasons. In one, a boy, aged ten, there was extreme deviation coupled with extensive adhesions between the septum and the inferior turbinals on both sides. The nose showed a peculiar stunting in its growth, affecting chiefly the cartilaginous portion of the external nose. In the belief that this mal-development was due to the bridling action of the adhesions upon the normal growth of the septal cartilage, I performed submucous resection and divided the adhesions. So far, however, the operation has not been followed by any improvement in the shape of the nose.

In the second case the patient, a young lady, was annoyed by a persistent whistling sound proceeding from the nose. It originated in a narrow chink between a deviated septum and an enlarged middle turbinal, and was, of course, cured by the operation.

There is one variety of nasal obstruction for which submucous resection avails little or nothing, namely in the pinched or collaterally compressed nose associated with the "Gothic" palate. In one case of this kind treated by submucous resection no benefit whatever resulted, and even complete resection of the septum with the intentional formation of a large perforation, to which I resorted to render the interior of the nose more roomy, failed to provide the patient with a useful nose.

The Operation.

All the cases were operated on according to the principles of Killian.

Anæsthesia.—Eighty-two cases were operated on under general and forty-eight under local anæsthesia. With increasing practice in the technique I find I am using local anæsthesia more and more and general anæsthesia less. At the same time the inevitable discomforts attendant upon any operation under local anæsthesia

always renders it unsuitable for sensitive people. In ordinary cases, however, a hypodermic injection of morphine (gr. $\frac{1}{4}$) or scopolamine and morphine (gr. $\frac{1}{100}$ and gr. $\frac{1}{6}$ to $\frac{1}{4}$) will soothe these discomforts and facilitate matters both for the patient and for the surgeon.

Whether the patient is conscious or unconscious the recumbent position is the most convenient. But the head and shoulders should be raised, otherwise there is a tendency in operating to deviate upwards away from the base of the septum. By so doing I twice inadvertently left behind large basal spurs.

In operating under cocaine with the patient sitting up, syncope interrupted progress five or six times; twice the patient became sick and vomited, and on one occasion the cocaine poisoning was so severe that the operation had to be abandoned. Vomiting during the operation is likely to lead to infection of the wound, and its occurrence, whether with local or general anaesthesia, is therefore objectionable.

These risks can be minimised by operating under local anaesthesia upon a recumbent patient. It is advisable, however, to insert the cocaine-soaked tampons before the patient lies down, so as to lessen the likelihood of some of the solution passing into the pharynx and being swallowed.

Asepsis.—Sepsis after submucous resection of the septum may manifest itself in several different ways. The commonest is follicular tonsillitis, a sequela which is due to carelessness in technique and is avoidable.

Acute rhinitis is another common septic accident. One of my cases developed membranous rhinitis from infection with the pneumococcus and was left with a perforation in the septum, due, I think, to the action of the organism. In another case of post-operative rhinitis the *Bacillus capsulatus mucosus* was, according to Dr. Wyatt Wingrave, the responsible agent—after the operation. In two of my cases nasal sepsis following the operation apparently led to ethmoidal suppuration. In none, however, did the septic infection give rise to any anxiety.

In order to avoid these tedious complications the lips, chin, cheeks, the outside of the nose, and above all, the vestibule, should be surgically cleansed before operation. The interior of the nose, however, should not be treated in this way, even when there is already sinus suppuration present. The field of operation should be isolated by covering mouth, lips, and nose with sterilised gauze.

Some Points in Operative Technique.—Every operator evolves his own minutiae, and I have no intention of taxing your patience with a recital of my own particular devices. Permit me, however, to mention one or two points.

In the raising of the muco-perichondrium a crucial point is reached when we pass from the cartilaginous to the bony section of the anterior septum, especially when there is a sharp-pointed spur or a deep gutter or recess to be negotiated. The reason is that the sub-perichondrial space is not continuous with the sub-periosteal space. The bone is completely enclosed in periosteum, and the penetration of the periosteal sheath from the sub-perichondrial space, especially when it is thick and tough, presents some little difficulty. The quickest and easiest method is to lay aside the elevator and to cut through the fibrous barrier with a sharp knife. If the edge of the knife is turned towards the bone, button-holing of the flap will be avoided. The judicious use of the sharp knife at any stage is, indeed, one of the secrets of success in the operation.

There is no need to dwell upon the host of elevators, forceps and gouges that have been devised for the operation, every specialist worthy of the name having invented his own. But I should like to draw attention to two points. First, when forceps are used to remove the vomerine plate at the back of the septum, it is advisable, I think, to cut clean through the bone without any twisting, rocking, or wrenching. Otherwise we may produce a fissuring fracture, the range of the extensions of which we can neither foretell nor determine. Secondly, only so much of the cartilage and bone should be removed as is necessary to relieve obstruction and pressure, or to provide space for subsequent manipulations. I am quite sure that an artistically symmetrical and mathematically straight septum is no advantage. Rather the reverse, indeed, for by rendering the nasal passages too roomy it may substitute one evil for another, and transfer the patient from the troubles of nasal obstruction with its hypertrophies, to those of nasal spaciousness with its crusts and atrophies. In this respect, indeed, each case must be treated on its own merits, the operator forming a picture in his mind as to how much or how little of the septal cartilage and bone ought to be removed.

Perforations and Button-holes.—In the submucous resection of the nasal septum, button-holing is a misfortune and perforation a disaster. It is true that many a man is going about the country to-day who is quite unaware of the perforation in his septum,

and there is therefore a tendency to look upon perforations as of no consequence. All the same no rhinologist can pretend to himself that he is pleased when a perforation results from this operation, expressly devised as it is to avoid such an occurrence. Moreover, it is questionable whether perforations are invariably the innocent and harmless conditions we hope them to be. At the same time, if an obstruction cannot be removed without making a perforation then I suppose it is better to make the perforation. With experience, however, it is astonishing how even the apparently inevitable can be avoided. In these 130 cases I have sixteen perforations, most of them quite small, and most of them in my early cases.

Perforations are not always produced at the operation. There can be no doubt that extensive bruising, brusque handling of the flaps, or prolonged pressure from a too lengthy operation, especially when combined with sepsis, may set up sloughing and a perforation which surprises the operator when his patient presents himself for inspection a week or two after the operation. For this reason, therefore, other things being equal, the most successful operator is he who combines celerity with gentleness and ease of manipulation.

Button-holes.—We make button-holes oftener than our onlookers imagine. They do not necessarily lead to perforation and thus they are generally disregarded. But they ought not to be; for the edges of a button-hole may gape and flap; granulations may sprout up around it; and in the reactionary swelling after the operation adhesions may form which will give rise to trouble at a later date. Apart from synechiæ, button-holes mean the ultimate presence of an area of non-ciliated scar-tissue and the likelihood of crust-formation.

Difficulties.—Apart from everyday difficulties like sharp spurs, deep gutters, traumatic deviations with adhesions, and so forth, on one occasion I encountered a septal cartilage with a considerable fenestra. Fortunately, the condition was recognised in time and a perforation was avoided.

In those cases in which the so-called "columnar cartilage" is displaced into one vestibule, the main septal deviation lying behind, the removal of the whole cartilage—vestibular and nasal portions—is open to the risk of withdrawing most of the support from the point of the nose. A device to which my attention was drawn by Dr. Dundas Grant enables us to avoid this danger. It consists in making an incision over the dislocated cartilage, and removing it, and then making another incision further back than the first in

order to resect the more posterior part of the septum. Between the two incisions a shore or prop of cartilage is left which supports the tip and columella of the nose, and, as it occupies the middle line, it is non-obstructive.

Another common difficulty is met with where the deviation is so extreme that the bend in the cartilage extends up to the bridge of the nose. In such cases our operation voyages between Scylla and Charybdis. If we remove the cartilage close up under the bridge we risk external deformity. If we leave it, the flap depending from it occupies much the same position as the septum itself did before the operation.

Troublesome Sequela.—Two results of operating, even when the operation itself has been quite successful, may give rise to subsequent trouble. One is turbinal engorgement, which, by inducing nasal obstruction, may render the patient doubtful of receiving the benefits he has been promised. Generally speaking, simple treatment or the use of the cautery will bring about cure of this condition. But there are several cases in my list in which the trouble persisted for a year or eighteen months. I assume that this disturbance is due to local shock, if not infection, upsetting the nasal vaso-motor system. The other objectionable after-result is an obstinate tendency to the formation of small fine crusts—a dry rhinitis—which has affected some six or eight of my cases; all of them, however, finally recovered. This sequel may be ascribed to the operation depressing the vitality of the ciliated cells of the septal mucosa membrane. The lesson to be learned from these occurrences is, I take it, that the operation should be speedily performed and with as little traumatism as possible. Plugging after the operation, for example—an unfortunate necessity—should be done with gauze dipped in sterile vaseline so as to minimise the risk of damage to the superficial cells of the mucosa.

In two cases it was found that the mould of maxillo-periosteum covering a basal spur still retained its original bulging position, in spite of the fact that the bone it had enclosed had been completely cleared away by means of a chisel at the operation. That is to say, that the sheath of soft tissues, being stiff and rather resistant, did not spontaneously flatten down after the bone inside it had been removed. The true state of matters was, however, disclosed on probing the prominence, and the remedy was simple.

Age.—My youngest patient was ten years old, the oldest sixty-one. But the majority were males between eighteen and twenty-five years of age. It is not yet settled whether operation

may be performed in early childhood without interfering with the subsequent growth of the nose. But Mr. Westmacott and others who have paid particular attention to the point have not reported any postponed deformity following an operation performed in childhood.

Results.—The greater the nasal obstruction the better is the patient pleased with the operation. We may note here that after the straightening of a deflected septum and the consequent opening-up of the nasal chambers to the air-currents the voice becomes richer and more resonant—a grateful result, particularly in patients who are actors, singers or public speakers.

In conclusion, let me remind you that the operation necessarily impairs the strength of the skeleton of the nose, and that a blow, even a slight blow, upon it may flatten the organ beyond recognition and beyond remedy. For this reason boxing, football, wrestling, etc., should be avoided by people who have had the septal resection performed unless they wear some kind of nose-guard. That there have been cases in which the operation has been followed by spontaneous flattening of the end of the nose is perfectly true, and it is possible to imagine circumstances in which such an event would be inevitable, but these circumstances must be rare.

In this paper I have necessarily dwelt chiefly upon certain unpleasant and disturbing events which occasionally attend upon the operation, but it would be wrong to let the impression get abroad that such mishaps are common. It is not so. In suitable cases there is, perhaps, no operation in surgery where the patient risks so little to gain so much.

DISCUSSION.

Dr. PEGLER pointed out that a hole in this flap, so long as it was distinctly on one side and corresponded with sound tissue opposite, assisted drainage in patients in whom blood extravasation tended to accumulate between the flaps. He regretted such an important subject should be relegated to this late stage in the discussion, and hoped the matter would be opened up fully at a subsequent meeting of the Association.

Dr. W. JOBSON HORNE (London) said that the operation had been in vogue some five or six years, and he considered the time had arrived for a stock-taking of the results ultimately obtained by the operation. The excellence of those results, he thought, had been prematurely stated in the past.

Mr. H. J. DAVIS said that perforations were not infrequent, and in certain cases, unless this happened, patients derived little benefit from the operation.

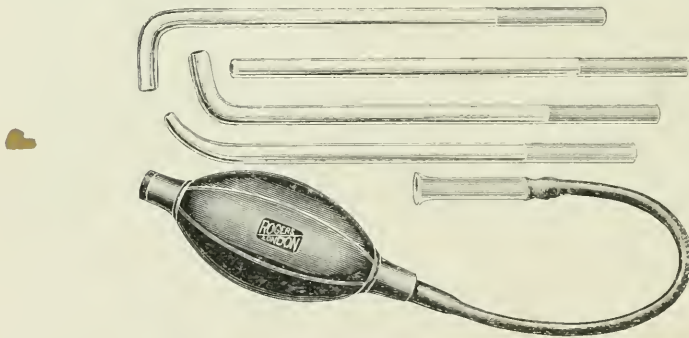
Dr. A. WYLIE (London) thought with Dr. Jobson Horne that the results of the submucous resection operation were, on the whole, not so favourable as had sometimes been reported.

Mr. HERBERT TILLEY thought that it was rather straining the use of language to speak of a perforation as a "disaster." Truly, a perforation was not the ideal at which the surgeon aimed, and it might disappoint him from an artistic point of view, but it might be argued that the patient frequently was not aware of the perforation, and sometimes was benefited by it, if the hole were not too small.

A SIMPLIFIED INSUFFLATOR FOR USE IN THE TREATMENT OF DISEASES OF THE THROAT, NOSE, AND EAR.¹

By JOBSON HORNE, M.D., B.C. (CANTAB.),
Surgeon to the Metropolitan Ear, Nose, and Throat Hospital.

THE insufflator consists of (1) glass tubes of various lengths, shapes, curves, and calibre to meet the requirements of the regions in which they are intended to be used. The end of a tube distal from the patient is roughened on the inner surface for an inch or more. This roughening of the inner surface of a tube permits of



the powder being retained *in situ*, and also of a measured quantity of powder being used.

The tubes may be used in the following way: The distal and roughened end of a tube is dipped into the bottle containing the powder to be used and when withdrawn retains the required amount of powder. If required for the larynx or the fauces or the post-nasal space the proximal end of the tube is suitably introduced and the lips or the nostril closed upon it, and the powder is aspirated on to the diseased surface. If the insufflation is not to

¹ Shown at the Birmingham Meeting of the British Medical Association, July, 1911.

be made by the patient, but by the physician or attendant, then piece (2) of the apparatus is attached to the distal end of the tube; this consists of rubber tubing, a rubber ball, and a glass junction.

The instrument can be used also for insufflating powder into the ear, the accessory sinuses of the nose, and into wounds generally.

The advantages of this form of insufflator over those commonly used are the following:

(1) Simplicity in construction.

(2) Cleanliness: The instrument readily permits of sterilisation and boiling.

(3) Cheapness.

(4) Simplicity in use and ease of auto-insufflation.

(5) Precise dosage.

(6) Economy in the use of drugs.

It is essential that the glass tubes should be carefully made, suitably curved, and that the part other than the roughened proximal end be absolutely smooth and thoroughly dried before being used. The insufflator is made by Mr. Frank A. Rogers, of 327, Oxford Street, London, W.

SOCIETIES' PROCEEDINGS.

ROYAL SOCIETY OF MEDICINE—OTOLOGICAL SECTION.

November 17, 1911.

DR. W. MILLIGAN, *President of the Section, in the Chair.*

Carcinoma of Middle Ear.

By W. MILLIGAN, M.D.

Patient, male, aged thirty-one, had suffered from suppurative middle-ear disease (right side) since four years of age. Four months previous to coming to hospital he received a blow over occiput and mastoid process of right side, which was followed by severe pain and headache. Upon admission right meatus was filled with a greyish-looking, sloughy polypus. Marked tenderness, but no œdema over mastoid process. Temperature, 99·2° F.; pulse, 82. Tuning-forks lateralised to right ear. No nystagmus, optic neuritis, or facial paralysis. *Diagnosis:* Malignant disease of middle ear (?); exploratory operation suggested. *Operation:*

Mastoid cortex removed. Cells full of vascular granulation-tissue and pus; two small sequestra removed. Dura over base of temporo-sphenoidal lobe found exposed and covered with granulation-tissue; growth springing from tympanic mucosa. Wound behind ear left entirely open. Great relief from pain and headache. Rapid recurrence of growth and development of facial paralysis. Death from exhaustion four months after admission to hospital. *Microscopic report*: "A true epithelioma; cell-nest formation well marked."

Carcinoma of Middle Ear; Facial Paralysis.

By W. MILLIGAN, M.D.

Patient, female, aged sixty-four. Left ear had discharged since infancy. No pain or discomfort until three months before admission to hospital. No history of injury. Admitted to hospital complaining of severe pain over left side of face. Left meatus full of friable and vascular granulation-tissue. No nystagmus; no optic neuritis. Tuning-forks lateralised to affected side. Facial paralysis well marked. Portion of growth removed for microscopic examination. *Microscopic report*: "Section shows irregular masses of squamous epithelial cells, with some attempt at 'nest' formation. Very little supporting connective tissue seen. The tissue appears to be a portion of a rapidly growing squamous-celled carcinoma, but the absence of normal tissue showing invasion makes it impossible to be quite certain."

Gradual increase of pain. Removal of mastoid cortex suggested. Mastoid cells found full of growth, extending backwards to lateral sinus, which was exposed, and forwards into zygomatic area. Invasion of exposed dura mater over roof of middle ear and mastoid antrum. Growth scraped out as completely as possible. Wound packed and left completely open. Great relief from "pressure pain." Rapid recurrence of growth. Patient since lost sight of.

Patient Four Years after Operation for Carcinoma of the External Meatus and Tympanum.

By C. E. WEST, F.R.C.S.

Operation, November 25, 1907: Removal of whole of cartilaginous and bony meatus, together with pre-auricular and mastoid superficial tissues and lymphatic glands. Extended radical mastoid operation. No recurrence. Squamous-celled carcinoma. Patient's external auditory meatus also shown with growth *in situ*.

The PRESIDENT (Dr. W. MILLIGAN) said he recorded his cases in order to elicit opinions as to whether traumatism had anything to do with the production of malignancy in the middle ear; or as to what might be the reason of a septic process becoming malignant in the course of years.

Mr. C. E. WEST said the first point of interest in Dr. Milligan's cases was the frequency with which carcinoma, so-called of the middle ear, was found, on examination, to be of the squamous-celled variety; absolutely typical, and looking on section like ordinary carcinoma of the tongue or lip. In February, 1909,¹ he exhibited a group of cases before the Section, in each of which the microscopical report was that it was typical

¹ JOURN. OF LARYNGOL., RHINOL., AND OTOL., vol. xxiv, p. 149.

squamous-celled carcinoma. He believed these present cases were not, properly speaking, carcinomata of the middle ear, except, perhaps, by extension, and that they originated in the deeper part of the external auditory meatus. He based his belief on two considerations: first, the histological character, which was nearly always that of squamous-celled carcinoma; and secondly, that he had seen a case of carcinoma which involved the meatus only—*i.e.* it had not penetrated the tympanic membrane at all. Otherwise, the growth was exactly like other growths that had penetrated the tympanum and involved the mastoid. With regard to the two points raised by the President—the influence of injury in connection with such growths, and the influence of septic processes—his own personal experience was so small that it was impossible for him to judge on a statistical basis from his own cases, but in a large number of cases attention was drawn to the occurrence of some accident to the head. Taking the first case, it was difficult to see how a blow on the occiput could produce malignant disease of the tympanum by any process of genetic connection. On the other hand, there was strong ground for thinking that the continuance of septic processes had an important bearing on the genesis of malignant disease. In these cases there was often a history of prolonged middle-ear suppuration, and though in some of them the suppuration was probably only secondary to the ulceration of the growth, in the majority the suppuration was antecedent to the growth by many years. In that connection he wished to point out that the site at which the growth commenced, which he believed to be in the floor of the deepest part of the meatus, was precisely where pus would lie in a pool during the whole course of the chronic suppuration. If one looked at malignant disease in other situations he thought that there again one saw the frequent coincidence of septic processes with the development of carcinoma. Only on the previous day he had seen a case with ordinary carcinoma, squamous-celled no doubt, growing on the mucous reflection on the side of the tongue, far back. That patient had a most hideously septic mouth and teeth. He believed that nearly all patients with carcinoma of the tongue had very septic mouths.

Dr. FITZGERALD POWELL thought that suppuration could not be looked upon as a causation or factor in the production of malignant disease of the ear, but that, as in other cancers, suppuration no doubt aggravated and increased the rapidity and extension of the growth, and this, he thought, was caused by the irritation of the cells by being bathed in the foul discharge, not by any specific action of the septic organisms.

Dr. DUNDAS GRANT remarked that in both the President's cases great relief followed the operation. He had seen such relief himself from partial measures, and he thought one should not be deterred from doing so much by the fact that the diagnosis of malignant disease had been arrived at.

Dr. PRITCHARD also desired to emphasise what Dr. Dundas Grant had said. He had known a number of cases in which it was not certain before operation that disease was malignant, where on operating the pain was absolutely relieved, as in the President's cases.

Mr. SYDNEY SCOTT said that, in his opinion, the surgeon should not be satisfied with a small and partial operation in such cases; but when it had been recognised that the disease was malignant, the widest possible operation which it was safe to carry out should be undertaken. In such a case he would not limit the operation to the ear itself, but would go further, and do what others had done in cancer of the throat and tongue—namely, remove the glands in the anterior triangle of the neck. In

other words, follow out the principle of Butlin's operation in cancer of the tongue.

Mr. A. CHEATLE thought members must be prepared to accept Sir Henry Butlin's conclusion with regard to cancer—namely, that it was due to a parasite. With regard to operations for carcinoma, it was his experience that when the middle ear was involved nothing would save the patient.

Dr. E. LAW said that suppuration of the middle ear was very common, but he had not himself directly seen carcinoma following suppuration, but had only heard of it from the patients.

Mr. C. A. BALLANCE said the question of the influence of trauma on the occurrence of malignant disease was an important one, but he thought one must look upon it as only a partial cause of the disease. Just as when one met with a case of tuberculosis of the knee-joint the patient would say that six months previously he had sustained an injury to it, so in malignant tumours there was generally a history of trauma given. Trauma might influence the soil in favour of the growth of cancer, but it could be nothing more than a partial cause. He had been much interested in Mr. West's case of operation on the case of carcinoma of the external meatus and tympanum, in which there had been no recurrence. Mr. West said he had dissected out the facial nerve and removed all the diseased bone. He referred to a similar case, but he did not obtain such a good result. Three or four years ago he saw a gentleman with an ulcer on the upper part of the pinna, which he took to be rodent ulcer. There were no glands involved, and the edge of the ulcer was not hard. He took away part of the pinna for examination, and Mr. Shattock reported that it was typical squamous-celled carcinoma. He did not see the patient again until the beginning of last April, when he presented himself with the complaint of itching in the meatus. During the last six weeks this had kept him awake at night. There was no discharge and nothing could be seen in the meatus, though it was a little swollen; the canal of the meatus on that side was not so large as that on the opposite side. No lymphatic glands were enlarged. The patient said he was going to Homburg the next day, and he told him to go, but suspected that there would be a recurrence. He heard nothing further of the patient until the middle of July, when he learned that he was well until May 15, at which date he had a very severe pain in the ear and called in a Homburg surgeon. That surgeon gave him hot fomentations, and after a few days incised the drum, but nothing came out. He believed the incision was repeated every day thereafter for a week, and at the end of a week pus came out, but the pain was not at all relieved. At the end of two or three weeks from the commencement of the severe pain—so severe as to require morphia—the surgeon called in another surgeon and they decided that a mastoid operation must be done. By this time some pus was coming away from the meatus. A small incision was made over the mastoid, the mastoid process was opened, and then it was decided it was of no use to go on with the operation. He had a letter explaining afterwards this was because there was a tumour inside the mastoid. He saw the patient when he returned on July 15 (he had been so ill with the pain that he had not been able to travel before that date). He then had an enormous swelling over the left ear, and foul pus was oozing from the meatus and from the incision over the mastoid, and almost the whole of that side of the head was cedematous. He made a very free incision, taking away the cortex of the mastoid, and found the cavity of the mastoid filled with foul pus and pinkish tissue. In front of the ear

there was a swelling as if the pre-auricular gland was enlarged. There were no enlarged glands in the neck. He removed the whole of the disease. The disease had completed the "complete" mastoid operation, and all he had to do was to scrape the cavity out and remove all the bone he could get hold of. He had not to think about the facial nerve as that had been already destroyed. For six weeks the patient was free from pain; but when at the end of September he was in great pain, the wound, which had been left open, had partly closed, and the huge cavity in the bone was again filled with pinkish material. It was all quite sweet, as the cavity had been treated daily. He thought that the only way to deal with it was to remove the material again, and he scraped it all out. But the relief from pain on this occasion lasted only a fortnight. The pain returned, and there were still no enlarged glands in the neck, but the edges of the wound became infected. He had the growth examined, and it was pronounced to be typical squamous-celled carcinoma. In front of the ear there was very considerable swelling, and he cut into that because it seemed to be partly fluid, but it was not so. He took a piece out and had it microscoped. This also proved to be typical squamous-celled carcinoma with nests. There was terrible pain from it, for which 3 gr. or 4 gr. of morphia a day were given. Mr. Ballance then met in London Dr. Coley and asked him whether he could do anything for his case. The answer was that if his fluid were used the pain would be taken away. He told Dr. Coley that the man was so bad—there was twitching of the arm on the opposite side, so that the disease had probably affected his dura—that he (Dr. Coley) had better come and inject it himself. Mr. Ballance did not then think the man would live more than a few days. Dr. Coley consented to come, and injected him with small doses of his fluid for a week, and then used a larger dose. After this he had an appalling rigor, lasting all night, during which it was thought he would die. But from that time he had had no pain at all. On the present day he was out for a drive, was taking his food well, and the lumps in front of and behind the ear had almost disappeared. He did not wish members to think that the Coley's fluid had brought about a cure, but it had certainly taken away the pain, and if any of his hearers had a case of carcinoma of the ear in which there was great pain he could strongly recommend the use of Coley's fluid. Whether the present patient would also be cured of his tumour he did not know, but he was apparently well and most of the tumour growth had disappeared. Sir Henry Butlin said certain cases of cancer did get well without anything being done, and this might be such a case, or the improvement might be due to Coley's fluid. He would also like to mention another case of great interest which he had had this year. A woman came from abroad with an appalling degree of epileptiform neuralgia. He discovered that she had a foul discharge from the ear, which she had had ever since she was abroad. He thought probably the temporal bone suppuration had extended to Meckel's ganglion, and had involved the fifth nerve. He did the ordinary operation and then found that the dura mater was adherent to the bone. He took away some of the bone and found that the meninges were adherent over a considerable distance, certainly to the cave of Meckel. She had clearly a meningitis which extended to the cave of Meckel and produced the neuralgia. He thought she would get well, for she was much better for some time. But the pain had now partly returned, and she was now evidently going downhill. About a month ago it was noticed that she had paralysis of the sterno-mastoid on that side, and that was a new symptom. Skiagrams also appeared to show sar-

comatous destruction of bone. He thought the area of suppuration which caused the attack of meningitis had become malignant. So that this was an illustration of old chronic suppuration, which had not only caused great distress, involvement of the fifth nerve, and pachymeningitis, but had become a malignant tumour of the temporal bone. Otherwise he did not know how it was possible for the spinal accessory nerve to be involved.

The PRESIDENT congratulated Mr. West upon the result in his case. He read a letter which he received from Dr. Wilkin, in which he said that the rarity of those cases, coupled with their practically hopeless course, led him to mention one under his care. About two months after the patient had been knocked down in the street, being much bruised about the head, the ear being particularly affected, he went to the Westminster Hospital complaining of great pain in the ear, and later came under his (Dr. Wilkin's) care at the London Throat Hospital. He removed a portion of the growth and had it examined; the report was that it was a squamous-celled epithelioma. Seeing an operation would be hopeless, he applied von Mosetig's pyoktannin treatment. He found that it relieved the pain and constant discharge. *Post-mortem* examination, however, showed that the growth had involved the whole of the bone down to, but not touching, the meninges. The effect of the treatment was first the great relief from pain, and secondly, the conversion of a foul discharge into a non-smelling one. He began with a one-five-hundredth solution, and worked up to one-three-hundredth. *Post-mortem*, the lymphatics were for some distance stained and knotted up. That was suggestive in connection with its use in breast cases. The President thanked members for the valuable hints they had given. He did not wish them to think that his impression had been that the blow was actually responsible for the carcinoma, but he thought that the trauma might have aggravated it. The cases he had seen had, according to the history, all followed prolonged suppuration of the middle ear, but he could not say he had seen such a case develop under his own eyes. With regard to the general question of sepsis, he looked upon it as a very distinct ætiological factor; indeed, he regarded it as a sort of trauma. With regard to operation, in neither of his cases did he think the growth could be removed. Although the idea of wide operation was, of course, entertained at the time, it did not seem feasible on consideration; and he therefore contented himself with removing the cortex, which procedure, as Dr. Grant remarked, afforded very marked relief from pain. He remembered the cases which Mr. West showed before the Section, and that the point was raised at the time whether they did not arise in the deeper portion of the epithelial covering of the auditory meatus and extend inwards. He could not say whether that was so in his cases. The whole of the tissues were so involved in the growth that it was practically impossible to make it out. He had been much interested in hearing Mr. Ballance's remarks on the value of Coley's fluid. Dr. Milligan had tried it; it had produced rigors, as in Mr. Ballance's case, but he had never seen any benefit result.

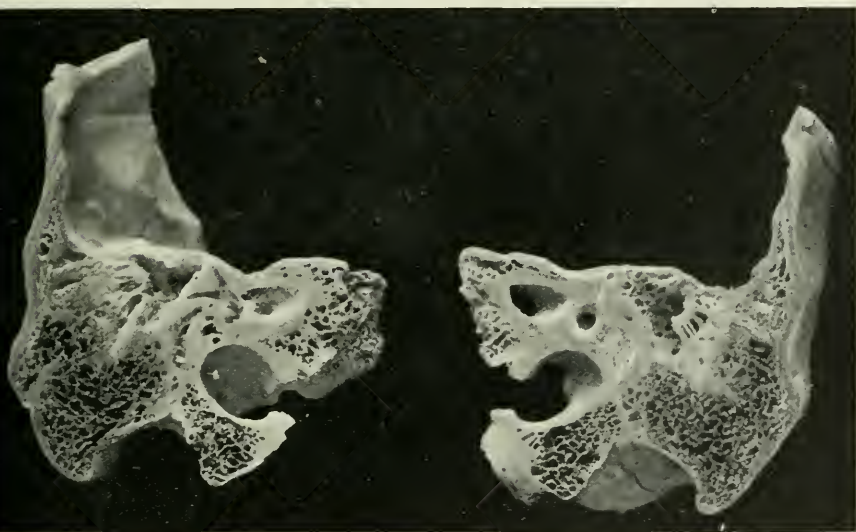
Mr. WEST, in reply, apologised for not being able to provide a specimen. This was in existence a few months ago, but had disappeared. It was the external meatus split longitudinally and showing the growth, a white mass, passing finger-like processes into the deeper tissues, just like squamous carcinoma of the tongue. He had been asked what he did with the facial nerve. With Mr. Scott's assistance, he dissected it out from the geniculate ganglion to the stylo-mastoid foramen, the loop being

held forward on a bent probe, and the deeper parts of the growth, which had extended into the sinus tympanicus and down to the facial nerve, were freely removed with a gouge and hammer. When he thought he had got to the end of it, the nerve was put back into its place. Of course, the patient had facial paralysis, but this cleared up later, so that six months after the operation he was in his present condition.

A Rare Form of the Diploetic Type of Temporal Bone.

BY ARTHUR H. CHEATLE, F.R.C.S.

The temporal bones are those of a man, aged thirty-three, who was a congenital imbecile, and who died of mania, broncho-pneumonia, and heart failure. Left bone: The outer wall of the antrum is diploetic, and



Left temporal bone, showing the distribution of the diploë.

measures half an inch in thickness: the diploë is separated from the foetal cells by a thin layer of dense bone. The section shows the three masses of diploë belonging to the zygomatic, squamous, and petrous elements to be separated from one another by distinct but thin layers of compact bone.

Right bone: This is somewhat similar, but the squamous and petrous masses of diploë are not marked off from one another, and the compact layer separating the zygomatic from the squamous diploë is thick and forms a dense outer wall to the antrum. A few cells run downwards from the apex of the antrum.

Mr. CHEATLE said this was a rather rare form of temporal bone, the rarity consisting in the amount and distribution of the diploë. It explained the cases of suppuration which ran an osteomyelitic course.

Case of Residua of Suppurative Otitis; Frequent Epileptiform Attacks which ceased after Ossiculectomy; Labyrinth Tests.

BY J. DUNDAS GRANT, M.D.

Mr. I——, aged thirty-four, was first seen by the exhibitor on December 13, 1906, complaining of sudden attacks of giddiness or loss of consciousness, and dulness of hearing in the left ear. He had been subject to attacks of dizziness for about four years before he came, and during the last two years had had attacks of vertigo and loss of consciousness. The attacks were of two kinds: one preceded by a feeling of pressure behind the ear, after which he fell over, and the other with absolutely no warning at all, in which he suddenly fell right down, with loss of consciousness. The attacks came on about three or four times a week. He had had deafness in the left ear since the age of eight or nine, but never remembered having had a discharge. On examination there was seen a depression corresponding to a perforation behind the malleus, in which the stapes was visible, with a sunken cicatrix attached to it; it was then noted that there was giddiness when Siegel was employed. He was at first treated with spirit drops, and on March 1, 1907, the exhibitor performed ossiculectomy; from that time he has been entirely free from the attacks. The rotation tests are practically normal, and are in either direction accompanied by vertigo. The caloric test was not employed, as there was ample evidence that the labyrinth was active and the injection of liquids offered a risk of re-awakening a former suppuration. The tuning-fork tests are as follows: Galton's whistle is heard in the left ear up to 6, but with noise machine in the right ear only up to 9; the tuning-fork on the vertex is heard better in the left ear; bone-conduction is normal in both ears, and Rinne's test positive in the right ear and negative in the left.

Dr. GRANT added that with regard to the "fistula test," it was difficult to say what nystagmus was produced. There was an irregular rotation of the eye, but he had not been able to determine its direction. It was suction which produced it most, and possibly it produced a complex form of nystagmus, such as would not be seen in fistulae of the external semicircular canal. It must act on all the semicircular canals together. That seemed a reason why the direction of the nystagmus should be so indefinite. The attacks had been looked upon as epileptic; and he regarded them as explained by peripheral irritation in the middle ear on a healthy, or perhaps over-sensitive, labyrinth. In answer to a question by the President, he said there was no definite auditory aura, but in one kind of attack the patient was conscious of a feeling of pressure behind the ear before the attack came on. In the other kind of attack the patient had no consciousness of any aura at all; he simply dropped down, and was sure his loss of consciousness was complete.

Dr. DAN MCKENZIE said probably most of his hearers would remember, in connection with this case, an interesting lecture by Sir William Gowers five or six years ago, entitled "The Borderland of Epilepsy." In that lecture attention was drawn to a series of cases in which there was an indefinite ill-defined type of epileptiform attack. The feature which struck him most was that in many of the cases vertigo was a prominent symptom. It was well to recall what was said in that lecture, and associate those unexplained symptoms with recent work on the labyrinth. It was possible that some, at least, of those cases originated, as this case

did, in a diseased condition of the labyrinth. If that were so, the possibility also existed that one might be able to relieve or cure many of them by a comparatively simple operative procedure. It was desirable to point out that a diseased labyrinth might be hyper-active.

Dr. DUNDAS GRANT, in reply, suggested that the indications in this case were that the labyrinth was healthy. There seemed to be an abnormal looseness of the stapes, and the impact of that stapes upon a healthy, or at all events only a hyper-sensitive, labyrinth, would account for the symptoms.

Case in which a Cholesteatoma "performed" the Radical Mastoid Operation.

By W. M. MOLLISON, M.C.

W. B.—, aged nineteen, was admitted to Guy's Hospital on July 18, 1911. He had suffered from otorrhœa from the right ear for eight months; he had had no pain but was occasionally giddy. Five weeks before admission an abscess formed behind the right ear and burst, and has discharged continuously since. On admission there was a sinus over the right mastoid, discharging pus, and otorrhœa from that ear. The left ear was operated on five years ago and is still discharging. At the operation on the right ear the whole mastoid was found to be filled with a cholesteatomatous mass; on removing this a cavity was seen imitating that produced by a surgeon in performing the radical operation. The walls of the cavity were beautifully smooth; the facial ridge was reduced to the smallest amount compatible with safety to the nerve. The disease had exposed the dura mater of the middle fossa over a small area, and over the lateral sinus was exposed a small patch of pachymeningitis. There was a fistula in the anterior part of the external semicircular canal into which a small probe could be passed, and the facial nerve was lying freely exposed for $\frac{1}{2}$ in. above the fenestra ovalis; on touching the nerve the face twitched (after operation no trace of paresis). The membrane (epithelial) lining the cavity was scraped away, and the fistula in the external canal was enlarged with the electric burr and bone removed just round the patch of pachymeningitis, a meatal flap cut, and an incision made through the crus of the helix, and a tube put in the meatus. Recovery uneventful; no vertigo or headache, though for three days after operation there was slight rotatory contra-lateral nystagmus. Seen again on October 10: The whole cavity was quite dry. Hearing of 4 ft. to conversational speech; upper tone-limit depressed to 14,000 vibrations per second (Edelmann-Galten whistle). No spontaneous nystagmus, no vertigo. Caloric reactions (head upright); in right ear reaction in fifteen seconds, lasted two to three minutes; in left ear much the same, perhaps a little more prompt.

Mr. WEST congratulated Mr. Mollison on the result which the disease and the surgeon between them had achieved. He confessed that, in some ways, it was to him a most astonishing case. There was a canal fistula; a probe was introduced through the canal, in its anterior part, so that the probe went into the ampulla, and probably into the vestibule. The fistula was enlarged by the burring, and in the end the hearing of the patient was most unusually good after the radical mastoid operation, both for speech and other forms of sound. He hesitated very much about putting probes into fistulæ in canals. Assuming the labyrinth was not involved, it seemed to him that in a canal fistula one was dealing either

with a labyrinth in which the periosteal lining of the canal was intact, and one would risk its rupture and acute infection of the labyrinth by the probe, or in which, at all events, the labyrinthitis had been so limited as to involve merely a small section of the canal. He did not know the practice of other members, but when he met with canal fistula and an active labyrinth he merely scraped the softened edges of the fistula with a small spoon, and in a general way treated it with the utmost respect. But after hearing about this case he might feel more bold in his exploration in future. He would be glad to hear if any members could trace any ill-effects to the use of the probe when the operation was not extended to the complete drainage of the labyrinth.

Dr. DUNDAS GRANT suggested that the scraping away of the epithelial membrane lining the cavity was a proceeding about which there was room for more than one opinion. In his earlier experiences he had a large number of cases in which he preserved this epithelial lining after operating; and he had seen cases in which this beautiful pearly lining was left after the spontaneous extrusion of cholesteatoma, such as Mr. Mollison described in this case. The healing in those cases was particularly rapid and good. His experience might have been exceptional, but this had been the experience of others also. He did not doubt that in this case, which could not be called Nature's operation, the result was very fine. He did not think the lining should always be taken away. The reason he had not seen so many favourable cases within late years was probably that cases had not been allowed to go on so long, as the production of such a lining required a long time.

Mr. JENKINS asked if Mr. Mollison actually did pass a probe into the canal. He said a small probe could be passed. If Mr. Mollison did pass it into the canal, it was difficult to account for some of the subsequent symptoms.

Mr. SYDNEY SCOTT said he considered there were two chief items of intervals: First that the cholesteatoma "performed" the radical mastoid operation. He was reminded of a similar case which Mr. Nixon Briggs showed the Section a few months ago, and of two other cases which he had seen in his own practice. The other interesting feature was the question of the labyrinth. With regard to probing a labyrinth fistula and its effects on hearing, he would like to remind members of a case which was shown before the Section some months ago in which a probe was passed, not into the external canal, but through a large fistula of the superior canal into the vestibule, and yet the patient's hearing was not disturbed by the procedure. Nevertheless, he would not advocate the use of the probe as a routine examination.

The PRESIDENT said that one point which struck him as of interest and as curious was the short duration of the case. The patient had suffered from otorrhœa for eight months, and this seemed a very short time for cholesteatoma to have done so much damage. He thought there must have been some semi-quiesscent condition going on for years. With regard to passing a probe into or through a fistula in the external canal, he had always avoided doing this; but at the same time he could not see why, even if it were done, the hearing should not be preserved. There was such a thing as a circumscribed labyrinthitis, and if adhesions formed there was no reason why the integrity of the cochlea should not be preserved.

Mr. MOLLISON, in reply, said he explored the fistula with a fine Jansen's probe; he did in each case what he did in this, so as to make quite certain that the fistula went through the bone. He had never seen

disaster follow from the procedure, although he had seen about eight cases during the last year. He had seen hearing preserved after opening the fistula in the canal in two or three cases. With regard to the suggestion that the discharge had been going on more than eight months he thought that was very probable, for the statement as to the duration was on the patient's word alone.

Mastoid Cyst after Operation.

BY RICHARD LAKE, F.R.C.S.

Child, aged twelve, had acute right mastoiditis in infancy, which was operated on. She recovered with loss of power in the facial muscles on that side. She then developed Pott's disease, and later a chronic left otorrhœa began to give trouble. Origin of otorrhœa uncertain. Mastoid operation; eventual cure. Now a discharging sinus in upper part of antro-meato-tympanic cavity, which was originally a thin-walled cyst. The contents were a thin, grumous, brown fluid; this comes away now to some extent.

Dr. LOGAN TURNER asked if Mr. Lake was sure there was a cyst, and if it was not, or might not be, a diseased pocket, in old mastoid cavity.

The PRESIDENT said the ætiology was an interesting point, and he would like to know if Mr. Lake did not consider it a tuberculous lesion?

Mr. LAKE, in reply, said it was a cyst when he first examined it, as he put a knife into it and obtained from it grumous fluid. He did not doubt that the lesion was a low form of tuberculosis. The history of the patient was a tuberculous one.

? Exostosis of the Promontory.

BY RICHARD LAKE, F.R.C.S.

Patient with a dry ear, the site of a discharge of many years. The promontory shows a small, almost spherical knob.

The PRESIDENT said he thought the spherical knob looked like the head of the stapes, somewhat dislocated downwards.

Patent Eustachian Tube after Mastoidectomy in a Girl.

BY E. A. PETERS, M.D.

The operation was performed on September 15. Skin-grafting was done a fortnight later, and it healed very successfully, with the exception of a small moist spot at the upper part of the ear. Apparently that was not directly over the opening of the Eustachian orifice, but it led down to it, as lotion passed into the throat. There was a thickened pseudo-membranous ligament across the lower part of the ear, and at present a probe did not reach beyond, so there was no pocket. Opinions were invited as to whether it was advisable to close this further, or to leave it open. At the time of the operation a curette was introduced into the mouth of the tube, which was gently curetted.

Dr. LOGAN TURNER said the case ventilated a very important matter in connection with mastoid operations, for in his experience there was nothing more difficult than to get a permanent and complete closure of the Eustachian tube; one might use sharp spoons and burrs, and recently he had been using the Yankauer curettes, which brought about a more

thorough curettage. But even with this the operation did not turn out satisfactorily. He had no doubt that it was necessary to close the Eustachian tube in many of these cases. It was only necessary to watch the mucoid discharge which was seen in the tympanic cavity after mastoid operations to enable one to realise that the discharge was coming from the naso-pharynx and Eustachian tube.

Mr. LAKE agreed with Dr. Logan Turner as to the extreme difficulty of closing up the Eustachian tube in such a case. He did not see how one could do so by curetting. Apparently this was the wrong way to attempt it, as the tube had a solid wall. The case would be different if there were soft walls to the Eustachian tube, for then by curetting away the mucous membrane one would find that the cicatricial tissue would form a stricture, and probably entirely close up the orifice. What was required was to give a redundancy of tissue. If one were not working at an awkward angle, it would be reasonable to try to reflect the mucous membrane round the Eustachian tube and tuck it in. But it was beyond the dexterity of his fingers to accomplish this.

Dr. DUNDAS GRANT said it was most important to attend to the healthy condition of the naso-pharynx. Very often with patency of the Eustachian tube there was an excess of mucus in the middle ear after the radical mastoid operation on the occurrence of a catarrh. He did not think that the small amount of moisture there did any great harm; it only meant that the naso-pharynx was in an unhealthy condition.

The PRESIDENT said he was an advocate of closure of the Eustachian tube, but he had found difficulty in accomplishing it. He had found the best thing was to preserve, if possible, a small portion of the tympanic membrane, and fold it back over the mouth of the Eustachian tube. This was far better than curetting, and made a more durable cicatrix.

Dr. PETERS, in reply, said it had occurred to him as feasible to inject paraffin at the time of the mastoidectomy. He wondered if this had been tried.

Malignant Tumour of the Naso-pharynx associated with Deafness, Neuralgia, and Weakness of the Levator Palati.

By HERBERT TILLEY, F.R.C.S.

S. H. B—, male, aged forty-one, consulted me on April 29, 1909, for deafness in right ear of six weeks' duration. There was no pain, discharge, or tinnitus. Ordinary tests revealed middle-ear deafness and the presence of fluid in the tympanum. Paracentesis and evacuation of clear serous fluid was followed by immediate restoration of hearing, which became duller the same evening, but on the whole remained better for some months. Seen again on April 10, 1910. Hearing very defective; examination proved that fluid was present in tympanum, and membrane was punctured again, and from now onwards there was a certain amount of discharge, which was small in amount and was treated by the instillation of spirit drops. The hearing did not improve. Early in January, 1911, he noticed a "small lump" in upper part of right neck, and consulted his doctor, who thought the swelling was a tuberculous gland because of strong tuberculous history in members of family. Neither the doctor nor a consulting physician could find any signs of tubercle in the lungs, but in view of tuberculous history, injections of tuberculin were given, and the second injection was followed by an evening pyrexia (101° to 102° F.), which lasted for six weeks, and only

ceased when open-air treatment was commenced. Only the two injections were given. About six weeks after the second injection of tuberculin severe neuralgia commenced, chiefly affecting the right temporal region and behind the ear over the lower mastoid region. It lasted severely for six weeks and rather shifted to the region over the right lower jaw and into the "glandular swelling." When the pain was severe there was a feeling of numbness and stiffness over the mandibular region. Associated with the neuralgia was a difficulty in opening the mouth, so that he found it easier to take soft food with a "spoon or the blade of a knife." Some four to five weeks ago he went to a general hospital with a view to removal of the gland, when an examination of the naso-pharynx revealed a tumour in the right side of this region; a small portion was removed for examination and was said to be "sarcomatous." Since this removal the patient can open the mouth wider. The neuralgia is much better than it was, possibly because by taking aspirin, which quickly relieves the pain, the patient does not allow it to become severe. Since April 10, 1910, till yesterday (November 16, 1911), I had not examined the patient, when I found the following conditions: Slight loss of nasal resonance in voice; marked deafness in right ear; slight discharge from right meatus, with perforation in anterior inferior quadrant of tympanic membrane; tests proved deafness to be of middle-ear origin; a hard swelling behind the ascending ramus of jaw; defective mobility of right side of soft palate; the lower edge of a naso-pharyngeal growth seen behind and below the right free edge of soft palate, which could be seen in fuller extent by posterior rhinoscopy. Digital examination revealed a definite, smooth growth occupying the right side of the naso-pharynx, and obscuring the Eustachian orifice and other anatomical features. This examination was difficult, because of the difficulty of opening the mouth widely. The anaesthesia over the right lower jaw is not very marked. This case is almost identical with the one which I saw with Dr. Edward Law and reported by him to this Section,¹ and also with those which form the subject of Mr. Trotter's paper in the *British Medical Journal*, October 28, 1911, "On Certain Clinically Obscure Malignant Tumours of the Naso-pharyngeal Wall." In all of them is to be noted that curious and almost diagnostic combination of early symptoms, viz. deafness, neuralgia of the second division of the fifth nerve, and impaired mobility of the levator palati muscle. The most common growth producing these symptoms is endothelioma. In this case, which is now in an advanced stage, operation is out of the question, and we propose to try the application, internally and externally, of radium. *Note.*—The early history is given in some detail, because of the prominence which was given to the tuberculous family history.

Mr. MARK HOVELL suggested that Coley's fluid should be tried, as he had seen beneficial results from that treatment.

Dr. DUNDAS GRANT said that at the present time he had a case under observation somewhat similar, but fortunately he got it in an early stage. The patient came to him four weeks ago on account of hæmorrhage, sometimes from his nose, and sometimes from his throat. He looked in the usual spots, and saw nothing to explain the hæmorrhage until he examined the naso-pharynx, and found what seemed to be a mass of adenoids. On the next visit deafness had developed, and he removed a small portion of the growth for examination. It turned out to be a somewhat indefinite epithelial growth. By means of the post-rhinal

¹ Vide JOURN. OF LARYNGOL., RHINOL., AND OTOL., vol. XXV, p. 141; and vol. XXVI, p. 196.

mirror he saw that it was chiefly confined to the left side. In the naso-pharynx it appeared exactly like adenoids, but it was somewhat more papillated, and hard to the touch. One could feel very deeply over the styloid process a gland which was tender on pressure, and the case would shortly be operated upon by Mr. Wilfred Trotter.

Dr. FITZGERALD POWELL asked if Mr. Tilley could tell him what was the site of origin of this growth, if in the antrum, nose, or the post-nasal space. The case was a very bad one, but he thought Mr. Tilley had operated on cases as bad, and he himself had certainly got prolongation of life in similar cases on which he had operated, and the patient was kept going for some time by repeated operations when recurrence took place: besides, the patient was much more comfortable than if the growth was allowed to go on without operation. The man was young, and he did not think he should be left to the doubtful benefit of radium in such an inaccessible part.

Dr. DAN MCKENZIE said that he remembered that some years ago Mr. Stuart-Low had, at the Central London Throat and Ear Hospital, a case very similar to this in regard to the ear symptoms, but not showing the appearance of tuberculosis. The patient was an old man, who had developed a discharge from his ear, and it was in the routine examination of the case that the discovery of a tumour in the naso-pharynx was made. A small portion was removed for examination, and was found to be endothelioma. A curious coincidence was that the following week, in the out-patient department, another old man came to him (Dr. McKenzie) with a similar history—namely, that of an ear discharge of recent origin. The man was deaf, and had some pain in his ear. On examining him with the post-nasal mirror a growth was seen, and it also turned out to be an endothelioma of the naso-pharynx. In neither case was the growth removable, and the patients disappeared from observation.

The PRESIDENT said there was a very important otological lesson to be derived from Mr. Tilley's communication, which was brought forcibly home to him a few years ago. This was that when there were frequently recurring attacks of sero-mucous catarrh in one or both ears, most minute attention should be paid to the naso-pharynx. One was apt to put it down to cold, to say the person had got a cold again, and the result was that an exhaustive examination of the naso-pharynx was not made. What brought this to his mind was that a good many years ago he was consulted by a lady, who for some months had very severe attacks of catarrh in one ear. On her coming to him again, after an interval of several months, he found there was some definite infiltration in the naso-pharyngeal mucous membrane. It turned out to be a case of carcinoma. Ever since that date, whenever the patient was beyond middle age, he dismissed from his mind the question of cold, and looked out for something worse. With regard to treatment, he would not take the absolutely pessimistic view which Mr. Tilley did, but would be inclined to perform a temporary resection of the upper jaw, and see if the growth could not be removed. He had seen, and successfully operated upon cases which at first sight seemed to be quite inoperable. Now and then there had been a case in which by doing a fairly formidable operation—either excision of one half of the upper jaw or temporary resection of the upper jaw—the growth had been successfully removed. And although he could not give a case in which recurrence had not taken place, he agreed with Dr. Fitzgerald Powell that the end of such a patient was easier than if no operation had been carried out. He suggested that perhaps Mr. Tilley would reconsider the question of operation.

Mr. TILLEY, in reply, said that an able operator had seen the patient and declined to operate; his opinion was that no permanent good would come of it. When one saw the jaw swung out, and the amount of infiltration which had taken place towards the base of the skull and into the neck, one realised why most of the cases were so hopeless. The patient was a young man, and was anxious to have anything done which would be of benefit. He would be pleased to inform him of the opinions which had been expressed at the meeting, but his own opinion was that it was a bad case, because it infiltrated the whole lateral wall of the post-nasal space so that it could be felt in the thickness of the sub-epithelial tissues about as far as the middle line. To get such a growth out successfully would be a very difficult task. There was no growth in the nasal sinuses; it was a deeply penetrating infiltrating growth starting in the naso-pharynx below the Eustachian tube, and extending externally into the upper part of the neck. If an operation were decided on and the growth recurred, he would resort to Coley's fluid or radium, or any other agent from which relief might be obtained. If radium was selected in place of an operation a powerful application would be made externally as well as to the growth in the naso-pharynx.

Brain Tumour (?) associated with Chronic Suppurative Otitis Media.

By D. LINDLEY SEWELL, B.S.

Patient, J. F.—, aged thirty-one, male, referred to me on September 8, 1911, by Dr. H. H. McNabb, whom he consulted on account of total blindness of three days' duration. History: That one month previously severe vomiting and dizziness occurred, lasting five days, both recurring three weeks later; occipital headache severe and continuous; loss of weight about 14 lb. Right ear had discharged for eighteen years—on examination pus foul, with pale granulations growing from the middle ear; acoumeter 5 in.; bone-conduction (C^1 256), normal; Rinne negative; Weber lateralised to right; no "fistel-symptom"; active response to caloric test; no tenderness over mastoid region, but right occipital region tender on percussion. No nystagmus. No paralysis of ocular muscles; pupils dilated, react sluggishly to light; intense optic neuritis both sides. Head retracted; neck stiff. Romberg's test, swayed to right side; on walking stumbled to right side. Knee-jerks absent left, present right side. Babinski left (?). Kernig's sign present right and left. Dvsdiadokokinesia marked both arms. Pulse 66; temperature 99.4° F. Operation the same evening—usual post-aural procedure. No definite carious track leading intra-cranially found. Posterior fossa exposed between sinus and labyrinth, but no pus discovered on exploring; middle fossa then exposed, and temporal lobe explored with negative result; great escape of cerebro-spinal fluid; dura then exposed over wider area and incised. Previously to exploring the brain, repeated attempts to obtain cerebro-spinal fluid by lumbar puncture failed. Following operation complete relief to headache, and no further vomiting took place. For the first three days there was perception of light, complete blindness then recurring. Cerebro-spinal fluid continued to escape freely, and a large hernia of the temporo-sphenoidal lobe formed. Patient stayed in hospital for four weeks, his pulse remaining about 66, and his temperature running from 98.4° F. to 99° F., then taken home, and at the time of writing is still living. While in hospital he was seen by Mr. P. R. Wrigley and Mr.

Garnett Wright, who advised against any further operative procedure. A probable diagnosis of cerebellar abscess was made on first seeing the patient, the presence of a suppurative otitis media making this a possibility. It seems evident that the diagnosis was wrong, and that some form of brain tumour is the lesion. The case is reported in order to elicit information on the points of differential diagnosis in the case. Has total blindness ever resulted from brain abscess?

PROCEEDINGS OF THE SCOTTISH OTOLOGICAL AND LARYNGOLOGICAL SOCIETY.

Meeting in the Royal Infirmary, Edinburgh, November 25, 1911.

DR. J. MALCOLM FARQUHARSON *in the Chair.*

Reported by DR. W. S. SYME (Glasgow).

Epithelioma of Laryngo-Pharynx.

By DR. J. MALCOLM FARQUHARSON.

P. T—, aged seventy-two, retired woodturner. Had slight hemiplegia four years ago. Otherwise had good health till six months ago, when slight difficulty in swallowing complained of and gradually increased. Three months ago pain superadded, which latterly became very severe, shooting up to the ear; pain constant, aggravated on swallowing. No syphilitic history. Got much thinner and weaker. No discharge from throat.

Examination reveals a hard, thickened, nodular growth, red, continuous with the right posterior pillar, extending from below level of base of tongue to beginning of lateral border of epiglottis, which it embraces on either side. Central excavation, clean floor, with hard, thickened, everted edges. Though no laryngeal symptoms complained of, there is marked redness and swelling of left ventricular band (*i.e.* opposite side to pharyngeal tumour), concealing entirely left vocal cord.

Mucosa of ventricle of Morgagni deep red and swollen, appearing as a ridge between ventricular band and cord. Movement good, less free on left side. After vocal rest and sedative treatment swelling greatly reduced. Posterior two thirds of cord clearly seen. Cords normal. At present time no distinct evidence of infiltration. Present position of ventricular band is probably due to torsion of structures. Movement good.

Case of Primary Nasal Syphilis.

By DR. J. MALCOLM FARQUHARSON.

Mrs. A—, aged twenty-eight, married, laundress; husband a sailor. Has been nursing a "delicate" illegitimate child belonging to a neighbour. First noticed small hard swelling within right vestibule a fortnight before seeking advice, followed by great swelling of neighbouring

parts. Slight blood-stained nasal discharge. Complains of slight neuralgic pains in head. Habit of picking nose.

On examination, hard swelling, about size of a large pea, found on floor of vestibule extending to septum. On clearing away crusts, etc., which blocked up naris, a small ulcer seen with indurated edges. Clean floor. Bleeds readily on probing. Floor covered with clear gummy secretion. Surrounding area "boggy." Marked œdema of whole nose, with congestion extending over both malar regions, and especially marked in eyelids. Submaxillary, sublingual, and right pre-auricular glands enlarged, hard and painless. Some fluid expressed from chancre showed spirochaetes, and gave a positive Wassermann's reaction.

"606" emulsion injected into buttock. Blood examined fourteen days later. Spirochaetes absent. Wassermann's reaction negative. Seen six weeks after injection; all swelling and induration had disappeared in about ten days.

Case of Laryngeal Lupus; Thyrotomy; Cure.

BY DR. G. T. GUILD.

Mrs. L—, aged thirty-five in 1903. Patient was sent to Out-patient Department of the Dundee Royal Infirmary by Dr. Young, complaining of hoarseness.

There was ulceration in posterior pharyngeal wall. Epiglottis was eroded. Numerous nodules on ventricular bands and ary-epiglottidean folds. Some of the more prominent nodules, which were very tough, were removed with cutting forceps, and local applications of lactic acid, creosote, and salicylic acid were made. As no improvement in hoarseness resulted she gave up attendance.

On January 10, 1904, she was admitted as an in-patient, complaining of dyspnoea. She had considerable respiratory difficulty, and, on examination, the nodules had increased much in size since her last appearance.

On January 12, under chloroform, low tracheotomy was performed, the thyroid cartilage split in the middle line, and upper part of trachea plugged with gauze. Nodules were then removed with scissors and cutting forceps. Thyroid was then closed with stitches along with soft tissues and skin; tracheotomy tube removed a week later.

Discharged February 11. Since that date she has had no further treatment, and has no difficulty in breathing.

Case of Suspected Inflammation of the Mastoid Process Illustrating the Diagnostic Value of a Skiagram.

BY DR. W. G. PORTER.

The patient, a girl, aged sixteen, was first seen in November, 1910. She was suffering from an acute double middle-ear suppuration requiring paracentesis on each side. He did not see her again until March, 1911, when he was told that the ear had dried up after discharging for some weeks, but that she continued to have pain behind the left ear, very definitely located to a point over the antrum. She also suffered from headache, the memory was impaired, and she was still quite unfit for any exertion, either bodily or mental. On objective examination nothing abnormal was made out, except that the membrane on the left side had

a faint yellow tinge, suggesting the presence of fluid in the middle ear, and there was also very slight pitting on pressure over the mastoid process. A skiagram of either side was taken at the Royal Infirmary by Dr. Logan Turner's kind permission. That of the healthy side showed a normal cellular mastoid process, while the picture of the diseased side presented a shadow such as Dr. Turner and he have learned to associate with suppuration in the mastoid process. The value of the picture was, however, discounted, as he had not posed the head quite correctly. He accordingly took a second photograph of the diseased side a day or two later, but did not develop it until after the operation. The girl was admitted to the Ear and Throat Infirmary, and, on the day following, the blood-count (kindly carried out by Dr. Struthers Stewart) showed a leucocytosis of 16,800. The cedema and the tenderness on pressure over the mastoid process had increased, and there was an evening rise of temperature, which, on the night before the operation, had reached 100° F. On opening the antrum and exploring the mastoid cells two days after her admission no evidence of disease was found. He then developed the second photograph, which showed a healthy cellular mastoid process. The wound was stitched a few days after the operation, and the girl soon regained her former health. The case is interesting in that the clinical features suggested a focus of suppuration in the mastoid process, but if the second photograph had been developed at once he certainly would not have performed an operation. (The three skiagrams were shown.)

DR. MALCOLM FARQUHARSON asked how skiagrams of the mastoid compared with skiagrams of the frontal and other sinuses. Were they as satisfactory?

DR. T. BARR asked if at the time of the operation there was any discharge from the meatus or a perforation in the tympanic membrane, or indications pointing to urgency for operation. Some cedema, tenderness on pressure over the mastoid with neither discharge nor perforation, and the temperature being but slightly above the normal, did not seem to point to any very serious urgency compelling operation before the second skiagram was developed.

DR. LOGAN TURNER said the fact that the patient had a leucocytosis, cedema, tenderness on pressure over the mastoid, and a temperature of 100° F., even without perforation of the tympanic membrane, was sufficient to indicate operation. He was surprised that nothing was found.

DR. MILLIGAN said some of the members would probably remember that Dr. Birkett, of Montreal, at a meeting of the British Medical Association in London recently, showed some very interesting skiagrams illustrating their value in mastoid disease. Before seeing Dr. Birkett's photographs he (Dr. Milligan) had made very few observations; since then, however, he had made a large number of skiagrams both in acute and chronic cases, and also in suspected tuberculous cases. As skiagrams go they were good, but it was not an altogether satisfactory method of ascertaining the presence or absence of definite mastoid disease; still, it was an aid, and a very definite aid in doubtful cases. In hospital practice it did not apply so much because one had a freer hand, and an exploratory operation was not thought so much of; but in private practice, when the crucial point was whether to interfere or not, a skiagram should at least be made.

DR. SYME was under the impression he had read somewhere that the mastoid was not always the same on both sides. He had tried, but

failed, to find the reference: perhaps some of the members could help him. If that was so it would go greatly against the value of the skiagram in the mastoid disease.

Dr. KERR LOVE thought radiography still rather untrustworthy, while the clinical evidence of mastoid disease as obtained by temperature and tenderness was extremely trustworthy. The opening of a mastoid process by operation is not a risky procedure, and he hoped none of them would be led away by a method of diagnosis which, as yet, was not very satisfactory.

Dr. PORTER, in replying, said he agreed with Dr. Milligan about the value of the skiagram. Dr. Logan Turner's experience and his own—it was mostly in Dr. Logan Turner's cases that the photographs had been taken—was that the skiagram was a valuable aid in diagnosis. There are certain cases where one is in doubt, and as this is another method of examination which will throw further light on such cases it would be foolish not to avail oneself of it. Dr. Barr had asked if there were any urgent symptoms. The condition of the child, as stated in the notes, and the fact that she had a fairly high leucocytosis, seemed to him sufficient to warrant the operation. The fact was that he felt certain that something would be found, and that accounted for his operating before developing the plate. As regards the similarity of the mastoids on the two sides, he believed from his reading that it was very rare for the mastoids to be dissimilar. Dr. Turner and he had not done a great many skiagrams, but in all of the cases the mastoid had been found to be similar on both sides.

Varix Involving the Soft Palate, the Left Tonsil, and the Pharyngeal Wall.

By Dr. W. G. PORTER.

The patient, Mrs. C—, aged forty-four, complains of inability to work or to walk much owing to shortness of breath. She has also great difficulty in putting on her boots or stooping, as this causes a choking sensation. She states that she has had varicose veins in the legs and vulva since the birth of her first child, when she was seventeen years old. She has also a small angioma on the left little finger. Her grandfather and her mother both suffered from varicose veins, and her eldest daughter, aged twenty-two, is also affected in a similar way.

The condition in the throat was first noticed by chance some sixteen years ago, and at that time she came under Dr. McBride's observation. She was then able to do her house-work, and no treatment was recommended. During the last eighteen months the symptoms have become greatly aggravated. On inspecting the pharynx a tortuous mass of veins was seen on the uvula, the left tonsil, the posterior pillar, and the wall of the pharynx. A blue, slightly raised area is also seen on the soft palate which overlies a second mass of veins. The larynx and naso-pharynx are healthy.

The patient is very anxious to have some treatment carried out, and he would be glad to hear the opinion of the Society on this point.

Dr. BROWN KELLY had had a patient under observation for years with an angioma of the cheek. The mass bulged a little into the nose and occasionally gave rise to profuse epistaxis. The appearance differed, however, from those in Dr. Porter's case. Electrolysis had been employed to control the bleeding from the nose and X rays tried for the condition

of the cheek. He thought that benefit had resulted, and that similar treatment might be considered for this case.

Dr. WALKER DOWNIE had a patient under observation in the Western Infirmary, Glasgow, whom he had seen twelve years ago, with varix of half the forehead, half the nose, half the palate and uvula, but not affecting the pharyngeal wall. The condition now is almost identical with what it was twelve years ago. There has been no hæmorrhage from the surfaces.

Dr. MILLIGAN suggested the use of carbonic acid snow.

Dr. MALCOLM FARQUHARSON had a patient in the same condition as Dr. Porter's. He had been treated with electrolysis for many years, and the condition was very much reduced. Three or four months ago in France carbonic acid snow was employed; it produced a very great reaction and prostrated the patient for a day or two, but the condition was certainly very much improved.

Chronic Pneumococcal Ulceration of the Pharynx, the Tonsils, and the Tongue.

By Dr. W. G. PORTER.

The patient, a young boy, has been under observation at the Ear, Eye, and Throat Infirmary since the beginning of January of this year. He was brought in the first instance complaining of sore throat and moderate pain on swallowing, both of some weeks' duration. When first seen there were small superficial ulcers on both tonsils and the pharyngeal-wall, and also small opalescent areas not unlike mucons patches; there was in addition some enlargement of the cervical glands. Ordinary antiseptic mouth washes and a spray of H_2O_2 were ordered, but had no effect on the condition. At the end of a week the patient was given a ten-days' course of anti-syphilitic treatment (Hg. by inunction and KI). At the end of this treatment the ulceration was more widely spread; in fact, the condition was rather worse than before. Dr. Struthers Stewart, clinical pathologist to the Infirmary, at Dr. Porter's request, examined a swab from the throat, and obtained a pure culture of pneumococci. The examination was repeated a month later with the same result.

On January 31 a course of vaccine treatment was commenced by Dr. Stewart. A stock pneumococcal vaccine was injected, and in all twelve doses were given, beginning at 4 millions and rising gradually to 10 millions. The treatment lasted till August, and was combined with local antiseptic treatment. The course of the disease was apparently in no way influenced. At first the condition became much worse, and in March the appearances were found which are well seen in a painting made at that time (the painting was shown). Two superficial ulcers were seen on the tongue, and there was ulceration on both tonsils. The soft palate and bifid uvula were covered with tenacious fibrin; to the right this was continuous with an area of very superficial ulceration, which was covered with a very thin opalescent fibrinous layer. The margin of the ulcer was sharply defined and had a rounded contour. A swab from the fibrinous area gave a pure culture of pneumococci. These appearances lasted about a fortnight and then disappeared; the ulceration then became worse on the tonsils. In June a glandular swelling appeared in front of each ear but disappeared without treatment. The voice at this time became rather hoarse, and has remained so ever since. The ulcera-

tion, though fluctuating in its extent, continued till September, when it disappeared spontaneously after a fortnight's visit to the country. At this time the local treatment had been almost entirely given up. At the present time (November 10) the pharynx remains healed, but there is some hoarseness due to laryngitis.

Chronic Middle-Ear and Labyrinth Suppuration; Sigmoid Sinus Thrombosis; Septic Leptomeningitis. Operation upon the Sinus; Drainage of Meningeal Spaces through the Labyrinth; Recovery.

BY DR. A. LOGAN TURNER.

L. M'D—, aged thirty-one, had had discharge from the right ear for three years, but had been deaf in it as long as she could remember. Vertigo off and on for one year. Pain in the right ear for one week. She vomited the day before admission. Admitted December 16, 1910.

Right ear.—Fetid discharge; small polypus; slight mastoid tenderness. Very loud voice, not heard with noise apparatus in left ear. Tuning forks not heard in right ear either by air- or bone-conduction. No spontaneous nystagmus. Caloric test with cold water; no nystagmus induced after syringing for four minutes.

Patient looked ill, and held her head in her hands on account of severity of headache. She had a rigor shortly after being put to bed. Temperature 104° F.; pulse 110.

No head-retraction; no Kernig; plantar flexion; knee-jerks active; no facial paralysis. Pupils medium, equal, and reacting to light; discs normal. No leucocytosis; white blood-corpuscles, 4500. Cerebro-spinal fluid under very considerable tension; no turbidity.

December 16.—Complete mastoid operation; cholesteatoma; wall of lateral sinus lying exposed in the bony cavity appeared healthy. The facial nerve lay exposed in its canal; a large opening in external semi-circular canal, through which granulation-tissue protruded; stapes absent. Double vestibulotomy; internal auditory meatus opened through the vestibule, and escape of cerebro-spinal fluid; no drain inserted, as the fluid would probably continue to flow freely. (The cerebro-spinal fluid flowed freely for three weeks.) After the operation, facial paralysis, marked nystagmus to opposite side, vomiting and giddiness. With exception of facial paralysis these symptoms had disappeared on the following day.

December 17.—Slight rigor, sweating, temperature 104.2° F.

December 18-19.—Rigor each day, but as patient was so ill operation on sinus not thought advisable. As patient had rallied later in the day, sigmoid sinus opened; then foul fluid evacuated; internal jugular vein tied and the bulb washed through. Bacteriology of the cerebro-spinal fluid by lumbar puncture on day of admission—*Streptococcus pyogenes* in cultures, and *Staphylococcus albus*. The fluid from the sigmoid sinus—diplococci resembling pneumococci; *Bacillus proteus*. Secretion from mastoid cavity—*Bacillus proteus*, *Streptococcus pyogenes*.

December 20.—Patient distinctly improved.

December 22.—Not so well; temperature again rising. Vaccines commenced—50 millions of the streptococcus from the spinal fluid and 100 millions of the *proteus* from the sinus given on alternate evenings. Four doses of the *proteus* and six doses of the streptococcus vaccine

were given. During this period temperature varied from normal to 102° F.

January 8, 1911.—Patient much improved: tongue clean: appetite improving: wounds healing.

January 11.—Cerebro-spinal fluid has now ceased to flow.

January 14.—Headaches again commenced: double Kernig very obvious: temperature again began to rise.

January 20.—Lumbar puncture; cerebro-spinal fluid under tension.

January 25.—A staphylococcus vaccine from this fluid commenced; the streptococcus no longer present, but a staphylococcus and some Gram-bacilli.

January 28.—Patient much better: has had three doses of vaccine.

January 29.—Lumbar puncture: cerebro-spinal fluid under pressure and turbid.

February 1.—Temperature normal, and continued so: vaccine repeated at intervals.

February 9.—Lumbar puncture; cerebro-spinal fluid under no tension: clear and sterile. Recovery complete, facial paralysis remains.

Dr. ADAM asked Dr. Logan Turner if in cases where there was retraction of the head he had ever known a case of recovery.

Dr. T. BARR inquired as to the condition found in the labyrinth to justify double vestibulotomy. Was the whole of the interior of the labyrinth involved, or was it confined to the lateral semicircular canal? Did Dr. Turner consider this a case of genuine purulent lepto-meningitis or one of serous meningitis? The distinction meant a very great difference in the prognosis. Had Dr. Turner any experience of the vaccine treatment proving successful in the typical forms of purulent lepto-meningitis associated with delirious excitement, great headache, and high temperature?

Dr. MILLIGAN congratulated Dr. Turner on the success of his case. It would be very desirable to hear Dr. Turner's view as to what actually constitutes lepto-meningitis, more from the bacteriological and microscopic points of view than the clinical. Did he consider a case in which there was an excess of leucocytes and polymorphs in the cerebro-spinal fluid, but without bacteria, a meningeal condition? What does he found on the cerebro-spinal fluid in which there are no cells at all? In one case recently under his (Dr. Milligan's) care, repeated examination of the cerebro-spinal fluid revealed no cells at all, but on three occasions bacteria were found. Were they, as otologists, to consider a case one of otitic meningitis when no bacteria were present?

Dr. STODDART BARR agreed with Dr. Milligan that the question of the diagnosis of meningitis was very important and in many cases difficult. In this connection he mentioned a case, which appeared to be meningitis, which had come under his notice a little more than a month previously. The patient, a young man, suffered from very severe headache with a certain amount of pyrexia, temperature as high as 101° F., and a rapid pulse in association with chronic middle-ear suppuration. After the mastoid operation the headache increased to such an extent that he was almost delirious with pain and had to be restrained. A lumbar puncture was made by Dr. Syme, in his absence, and about an ounce and a half of semi-turbid fluid under some pressure was withdrawn. Immediately afterwards the headache was almost absolutely relieved and did not recur. Recovery was quite normal and uncomplicated. The pathological examination of the fluid disclosed an excess of polymorphonuclear leucocytes, and the presence of a diplococcus, which the pathologist

likened to Weichselbaum's, but it was not exactly the same. Clinically this case appeared to be serous meningitis, but in accordance with the pathological report it must be regarded as a purulent meningitis. He thought that at some future meeting of the Society a discussion on "the diagnosis of purulent lepto-meningitis" would be very desirable.

Dr. SYME thought when reading Dr. Turner's description of the case that there could be no doubt that the right treatment had been carried out. He should like when they came to discuss Dr. Fraser's paper that this question might be gone into more fully, and that they might have some definite rule to guide them with regard to the question of operation on the labyrinth. There was, of course, decided danger in operating on the labyrinth. When were they to consider it advisable or not? An interesting point in this case was that although the caloric test was negative the destruction of the labyrinth was incomplete: the static labyrinth must have been active to some extent, for after the operation there was marked nystagmus to the opposite side. So that in this case the infection of the meninges was through the auditory portion of the labyrinth. Thus it followed they should be guided in opening the labyrinth not only by the caloric test, but by the reduction in hearing and the tuning-fork tests. The case Dr. Stoddart Barr mentioned was most interesting because the patient had terrible headache, he was almost delirious, and yet almost while the lumbar puncture was being performed he said his headache was very much better. He had all the signs, as far as could be made out, of meningitis. When the pathologist reported there were pus cells in the fluid, the conclusion was that the man was bound to die: however he did not. The question of the value of the vaccine treatment arose. Here was a case of definite purulent meningitis, and the patient got better by the withdrawal of a fair amount of turbid fluid.

Dr. LOGAN TURNER, in reply, said he had been much interested in the remarks the various speakers had made. They had raised one of the most difficult questions in otology, namely, What are the varieties of meningitis? He was not prepared any more than they were to discuss the different varieties of meningitis at that time. He would refer them for further information to a very valuable paper by Lermoyez; he could not remember the actual reference, but Lermoyez had gone into the subject very carefully. Two points had been raised, namely, (1) Was the case one of purulent lepto-meningitis? and (2) What is the value of vaccine treatment? Now, what seemed to be the position was that here there was a chronic mastoid suppuration with evidently some intra-cranial complication, with a clinical picture of chronic middle-ear suppuration. On performing the mastoid operation the facial nerve was found lying naked in the canal; there was a large opening in the external semicircular canal through which granulations were protruding, but no actual pus coming out through the canal. It is known that so long as a patient has a chronic middle-ear suppuration the chances of meningitis are about 1 in 600; when the inner ear becomes affected 1 in 8; these were not his own figures, but he believed them to be fairly correct. Now the patient had at the same time cerebro-spinal fluid under tension, she had a temperature, she had headache, and she had the inner ear mischief, therefore one felt—as one always does in suspected meningitis—it right to give the patient the benefit of the chance. It seemed the wiser plan to go into the internal auditory meatus. This was done, and how far that lead to the happy result he did not know, but he thought they might say that it had. An interesting point was that the cerebro-spinal fluid discharged

for three weeks, then stopped, and two days later all the meningeal symptoms commenced again—headache, double Kernig, some temperature; the cerebro-spinal fluid was again under tension. Repeated lumbar punctures were performed, and vaccines were commenced. With regard to the question of vaccine treatment, he must honestly confess he would not like to say it had any bearing on the result; if the patient had been given vaccines and no lumbar punctures perhaps the result would not have been so good. The question of the different forms of meningitis would be a very useful discussion for this Society at a future date.

THE FRENCH SOCIETY OF LARYNGOLOGY, OTOLOGY AND RHINOLOGY.

May, 1911.

President: E. ESCAT (Toulouse).

Reported by A. R. SALAMO (Paris).¹

(Continued from vol. xxvi, p. 487.)

Classification of Deafness.

By DR. J. MOLINIÉ.

Multiplicity and lack of uniformity of acoumetric methods leading to confusion, Molinié proposes to take hearing power for conversation as a criterion for the estimation of deafness. Adopting this principle, he arranges the various forms of deafness in four categories, differentiated by the following characteristics:

(1) Although having a more or less appreciable alteration in hearing, the subjects of this class are able to participate in ordinary conversation, attend functions, theatres, church, etc. Obligated to maintain a forced attention, they miss some words and oftentimes require them repeated; still they can lead an ordinary life and fulfil most public duties.

(2) Patients who no longer hear ordinary conversation, and can only converse *l'oe à l'oe*. Gatherings and conferences are devoid of interest to them and they absent themselves from choice. Sometimes, however, they are able to appreciate music. They are only competent to take up occupations involving but little responsibility.

(3) This category comprises those who only hear loud conversation, or shouted words near the ear. These patients are unfit for all public employment.

(4) Here are included those cases where the auditory apparatus has been completely destroyed. The subjects of this group are compelled to resort to writing or gestures to communicate with their fellows.

Molinié pointed out that this classification was not entirely arbitrary and artificial, but that it conformed to some ordinary well-defined types, and in some measure to the stages of deafness. The information

¹ Translated from *Les Archives Internationales*, tome xxxi, supplement to No. 3.

furnished by this method of classifying the deaf would, if it were adopted, enable one to form an opinion, at least approximately of deafness in the subjects examined, which is impossible with methods of estimation at present in vogue.

Lactic Acid Ferment in Rhinology.

BY DR. KÆNIG (Paris).

The author has employed Dr. Boucard's preparation in ozena and has had good results. In ordinary rhinitis during the early stage he has also experienced excellent results. A little powder used as snuff in the initial stage of coryza causes its disappearance.

Re-education of Hearing by Zund-Burguet's Method.

BY DR. A. RAOULT (Nancy).

The author reported six cases of otosclerosis markedly improved by the above method. These patients attended fifty courses of the treatment. The method comprises: (1) Re-education for sounds from the first to the fifth octave, which may be graduated at pleasure; (2) stimulation of tactile sensibility, induced by the passage of Faradic currents in the microphonic circuit. The duration of the *séances* varies according to the nervous state of the patient and the intensity of the sound given. Passage of the induced current gives rise to a sensation of tickling in the ear; this is not noticed during the first *séances*, especially in the case of old sclerotics. These at first experience a feeling of intense vibration, which gives place to true tickling at about the tenth or fifteenth sitting. From a study of these facts we may infer that re-education by Zund-Burguet's method causes (1) mobilisation and massage of the conductive media; (2) stimulation of the preceptive auditory mechanism. In fact the patients frequently perceive cracking sounds and sometimes buzzing in the ears between the *séances*. Stimulation of the nervous system acts on the receptive auditory mechanism, the sensory and vaso-motor nervous systems. Sounds become progressively perceptible. The sensation of tickling gradually reappears. Lastly, after each sitting the patients experience a sensation of warmth in the ear, and often in the whole of the head. The improvements observed in the patients continue to manifest themselves even when treatment is discontinued, and Helmsmortel, of Antwerp, has noted their persistence in patients treated a year previously.

Some Considerations on the Zund-Burguet Method for the Treatment of Certain Forms of Deafness.

BY DR. ROURE (Valencia).

Dr. CHAVANNE (Lyons) asked if the method of re-education had not for its object the reawakening of function. He would be pleased to be acquainted in detail with Zund-Burguet's apparatus.

Dr. JACQUES (Nancy) asked what was the remote result of the method.

Dr. LUC (Paris) wondered whether improvement would not have occurred without treatment.

Dr. RAOULT (Nancy) remarked that the manufacture of the apparatus

was secret, but that does not detract from any of its merits. To Dr. Luc's criticism, he answered that his patients had been affected for the past two years.

Dr. BONAIN (Brest) inquired why this method was designated "the method of re-education." The term, he thought, was badly chosen.

Dr. GAULT (Dijon) had had two cases treated by this method, with not very brilliant results. It ought to be tried on thoroughly typical sclerotic cases.

Dr. ROURE (Valencia) replied that the results obtained lasted several months. He had a sclerotic patient of twelve years' standing who has remained much improved for several months past.

Dr. TRÉTRÔP (Antwerp) insisted that the distinction between adhesive otitis and otosclerosis should be clearly established, the former recovering under other methods of treatment.

A Special Form of Mastoid Infection in Chronic Infantile Otorrhœa: "Mastoiditis Nigra."

BY DR. BRINDEL (Bordeaux).

In this communication, based on 16 cases out of 1200 operated on, the author arrives at the following conclusions:

(1) There are some infections of the mastoid process characterised by diffuse cellulitis, blackish in colour, which he designates "mastoiditis nigra."

(2) This affection is peculiar to infancy, and is met with almost exclusively in fœtid otorrhœa of long standing.

(3) The dark coloration does not exclude lesions which one is accustomed to meet with in chronic otorrhœa.

(4) Mastoiditis nigra is a diffuse osteomyelitis almost always necessitating the radical mastoid operation.

(5) Events run a normal course after operation.

(6) For years after recovery, blackish bullæ, due to separation of the epithelial lining by a dark-coloured fluid, are sometimes met with on the walls of the operated cavity.

(7) The pathogenesis of this affection is still unknown. A cultivation taken from morbid tissue during the operations was unattended with any result.

Conservative Treatment of Chronic Suppuration of the Middle Ear, with or without Lesions of the Labyrinth Wall.

BY DR. TRÉTRÔP (Antwerp).

From statistics during the past ten years the author observed that major operations did not exceed 5 per cent. of the cases treated, and in one series of cases fell below 2 per cent. This treatment therefore deserves consideration. In Germany, Scheibbe and Siebenmann have experienced similar results. Chronic otorrhœa of ten, fifteen, or even twenty years' standing is amenable to treatment by asepsis and antiseptics. Localised carious processes of the labyrinth are not an exception to these results. Trétrôp especially extols preparations capable of conveying oxygen, *e. g.* perhydrol, perganol, alkaline perborates, peroxide of zinc. Oxygen induces elimination, and augments tissue vitality. Amongst antiseptics, mercurial salts, formalin and its derivative amiodol, silver

salts, especially those of an organic nature, as protargol, argyrol, etc. Chronic acid, boric, lactic, picric and iodine—each has its indications, which are learnt by experience.

Routes of Access to the Cavernous Sinus.

By DR. BOURGUET (Toulouse).

After having mentioned the methods of Voss, Luc and Tavenier, the author showed by the aid of drawings that the best route for reaching the sinus consisted, after a para-nasal incision, in removing the nasal process of the superior maxilla, the whole of the inner wall of the orbit, with the corresponding ethmoid and part of the nasal septum, and, after penetrating the sphenoidal sinus, in removing the inner wall of the cavernous sinus with a chisel. This is a direct way of access, which affords ample room and does not disfigure the patient.

Dr. LAFITTE-DUPONT (Bordeaux) had operated on the cavernous sinus by the unilateral trans-maxillary route and realised the difficulties of getting at the sinus by this method.

A Case of Cerebellar Abscess; Operation; Recovery.

By J. LABOURÉ (Amiens).

A patient, aged twenty-three, suffering from chronic otorrhœa, suddenly developed vertigo, vomiting and severe headache. In spite of antrotomy the symptoms persisted with spontaneous nystagmus towards the corresponding side. These phenomena were attributed to the cerebellum, but examination of the internal ear revealed labyrinth involvement as well. During the radical operation the curette penetrated into a cerebellar abscess and clinched the diagnosis. The labyrinth was not touched, as there appeared to be no connection between it and the abscess. Recovery followed in a month.

Determination of the Upper Tone-limit by Aërial and Bone-conduction, by means of Struycken's Monochord.

By DR. CHAVANNE (Lyons).

The monochord recently constructed under the direction of Struycken is really the best instrument for estimating the upper tone-limit of hearing by aërial conduction. Moreover it enables one to estimate the limit by bone-conduction; for contrary to classical opinion, the highest notes are perfectly heard by bone-conduction. Normally the upper osseous limit is always higher than the aërial. In commencing sclerosis one finds a raised limit for both forms of conduction, but especially in the case of osseous.

Retro-Auricular Abscess following a Meatal Furuncle in a Patient previously Operated on for Mastoiditis.

By DR. F. CHAVANNE (Lyons).

In February, 1890, a child, aged seven years, was operated on for acute mastoiditis and recovered normally. A year later, after a boil of the meatus on the same side, suppuration of the middle ear developed.

with a retro-auricular abscess the size of a hen's egg, occupying the old operated cavity. Recovery followed opening and evacuation of the abscess.

The Complications of Adenoidectomy.

BY DRs. GROSSARD AND KAUFMANN.¹

Dr. BONAIN (Brest) said that we could avoid traumatic complications by good illumination, general anæsthesia and skilful use of instruments. He considered it an exaggeration to say that general anæsthesia was not necessary in patients under five years of age.

Dr. CHAUAUNE (Val-de-Grace) held that adenoidectomy was not the minor operation that people thought. It was most essential to watch one's patients for several days after the operation. The patient ought to be confined to his room.

Dr. CASTEX (Paris) showed a child who was an example of the complications following adenoidectomy. This child had a diaphragm which absolutely impeded breathing by the mouth.

Dr. MIGNON (Nice) cited the case of a child operated on by a non-specialist. There was copious hæmorrhage and fever. On examining the patient he found a portion of adenoid tissue in the pharynx.

Dr. JACQUES (Nancy) had been struck at the limit of five years, fixed for general anæsthesia. Post-operative torticollis was a frequent complication. He had never been greatly alarmed concerning the fall of adenoid vegetations into the larynx. Exception must be taken to the tendency of considering adenoidectomy a benign operation.

Dr. BROECKHAERT (Ghent) found suppurative otitis to be commoner after adenotomy than was generally supposed. The importance of the operation must be insisted on.

Dr. GROSSARD (Paris), in reply, said that it was purely a personal opinion to consider an anæsthetic unnecessary under five years of age. It was simply a matter of discretion.

A Case of Cerebral Abscess of Otitic Origin Operated on whilst in a Comatose Condition; Recovery.

BY DR. BARR (Nice).

A woman, aged fifty-six, was brought to the Nice Hospital deeply comatose. Old-standing double suppurative otitis, with cessation of discharge on the right side. Left hemiplegia, right facial paralysis and paraphasia, the only physical signs present at the time, enabled the author to diagnose an abscess of the right temporal lobe. The abscess was operated on during deep coma, aided by chloroform. The patient came round during the operation. Complete recovery followed. This case afforded the opportunity for reviewing the symptomatology of cerebral abscess. Embracing the very practical symptomatological division of Bergman, the author showed that in taking into consideration the symptoms of cerebral compression, the endo-cranial tumour indicated by them is a purulent one, that is an abscess, if symptoms of general suppuration accompany it. It then remains to discover its situation. Localising signs afford help. They may be rare and obscure, especially when the abscess is on the right side (Monre). They are motor and sensory paralyses, aphasia, associated with psychic troubles, fixed headache and a peculiar febrile state.

¹ See JOURN. OF LARYNGOL., RHINOL., AND OTOL., July, 1911, p. 383.

Contribution to the Treatment of Ozæna by Nasal Respiratory Re-education.

BY DR. ROBERT FOY (Paris).

The author related the results of his researches carried out during the past two years both in Lermoyez's practice and at Mahu's clinic. The treatment was described and the necessary apparatus exhibited. The author remarked that ozænatous subjects breathe inadequately and most often not at all by the nose. By nasal respiratory re-education with compressed air he noticed that from the day patients breathe freely and continuously by the nose, the odour and crusts permanently disappear, in spite of entirely discarding lavage. Sometimes after treatment a discharge of whitish mucus persists, such as one meets with in many non-ozænatous persons (catarrh). In thirty-two advanced cases of ozæna there were twenty-two recoveries and ten failures. In the case of the latter nasal respiration could not be re-established owing to the patients being too young and not possessing the necessary intelligence. Crusts and fœtor are only the results of diminution or absence of nasal breathing, the necessary physiological stimulus to the mucous membranes of the upper air-passages for the carrying on of their manifold functions, this functional trouble always being secondary to, or associated with, a chronic mucopurulent catarrh, specific or not.

Dr. BRINDLE (Bordeaux) asked what grounds one had for saying that the ozænatous patients breathed badly through the nose. Did not Foy's method consist solely of a form of massage of the mucosa? He had tried the treatment of re-education, but the patients had not been cured of their ozæna. The general health was improved, but ozæna persisted. Had Foy carried out his treatment without accompanying it with a topical application?

Dr. MOURE (Bordeaux) said that ozæna occurred in the trachea, and if the disease was due to default of respiration there would be no tracheal ozæna. Besides, there is very often sinusitis complicating ozæna, and in that case what could re-education do?

Dr. MAHU (Paris) had entrusted a large number of patients to Foy. They had not all benefited by the treatment; the majority were improved: some were cured, in so far that they no longer had crusts or fœtor. In some cases they had supplemented the treatment with injection of paraffin. In his opinion the double method—re-education and paraffin—seemed to be the best form of treatment.

Dr. R. Foy, in reply, said that at first sight the patients appeared to breathe by the nose, but more critical examination showed that they lose the habit of nasal respiration. Obviously the method was one of massage, but it was continuous, since it was carried out by the patient, and herein lay the value of the procedure. The author thought that in tracheal ozæna there was also an insufficiency in thoracic respiration. He did not expect to cure patients with sinusitis; he had some failures, and attributed them to the fact that it had not been possible to re-establish nasal respiration.

Dr. JACQUES (Nancy) improved his patients by introducing a tampon of wool, thus preventing the access of air. By this simple treatment the crusting abates and fœtor is much reduced.

The Buccal Route as an Approach to the Peri-tonsillar Region and Maxillo-pharyngeal Space.

By DR. GAULT (Dijon).

After removal of a lympho-sarcoma of the right tonsil by the buccal route in a man, aged thirty-two, the author carried out some anatomical and operative research of the peri-tonsillar region and maxillo-pharyngeal space. He concluded that (1) the peri-tonsillar region and maxillo-pharyngeal space are easily accessible by the buccal route provided that the anterior pillar be well drawn outwards by means of a lateral retractor, the patient being in Rose's position, the mouth widely open, and the region well illuminated by the frontal mirror. (2) The operation consists in making a vertical incision of the pharyngeal mucosa; retraction is then exercised outwards so as to expose the bony landmarks—inside the vertebral column, outside the styloid process, behind and outside the transverse process of the atlas. These are felt with the finger and probe. One then recognises the stylo-pharyngeus muscle and behind it the internal carotid. (3) This vessel can be ligatured or secured by forceps, and, if necessary, drawn outwards with the vagus and internal jugular vein by means of the lateral retractor, which enables the operator to work comfortably. (4) Intervention by the buccal route is relatively easy, and enables one to remove pharyngeal tumours, when not too extensive, without great mutilation. The difficulties of this method have always been exaggerated through fear of the internal carotid, although that vessel is really posterior and some distance off. To avoid it, one must recognise it. (5) This route is only contra-indicated in the case of too extensive growths with glandular involvement (sub-angulo-maxillary, parotid or inferior jugular). On the contrary, epithelioma in the early stage and certain primary lympho-sarcomata, etc., of the naso-pharyngeal isthmus are amenable to this procedure. The mutilation is slight and the after-treatment particularly simple.

Dr. JACQUES (Nancy) was impressed with the benignity of the operation in old people and with the great facility of this route. Cancers are removed in an extremely easy manner by this method.

Dr. LUC (Paris) asked what form of anæsthesia M. Gault employed.

Dr. JACQUES (Nancy) added that glandular involvement was rare in tumours of this region.

Dr. GAULT (Dijon) in reply, said that he sometimes employed general anæsthesia and sometimes local. He also remarked that glandular infection was, upon the whole, rare in growths of this region, and some glands could be removed by the buccal route. Continual swabbing sufficed to control hæmorrhage during the operation.

Latero-pharyngeal Abscess of Otitic Origin.

By DR. GUISEZ (Paris).

The extension of auricular suppuration towards the pharynx is not of frequent occurrence, and only a few cases of it are on record. The author had occasion to operate on a child, aged two, for a very extensive latero-pharyngeal phlegmon accompanying otitis. The abscess gave rise to asphyxiating symptoms and had to be evacuated as a matter of urgency. Three days afterwards, as the temperature did not fall and the mastoid was very painful in its anterior third and apex, trephining was performed,

It was then easy to see that necrosis was present, chiefly in the deep portion of the mastoid, the anterior wall of the meatus and the floor of the tympanum; the osseous lesions extended deeply towards the pharynx. The latero-pharyngeal phlegmon was therefore otitic in origin.

Primary Tumours of the Trachea and Bronchi; Tracheo-bronchoscopic Diagnosis and Treatment.

BY DR. GUISEZ (Paris).

The author had had the opportunity of diagnosing a certain number of primary tracheal growths, several of which he had been able to remove by the direct method. They comprised papillomata in children, polypi, primary or secondary to tracheotomy wounds, intra-tracheal fibromata with their pedicles situated posteriorly, two cases of hernia of the posterior wall of the trachea, and enchondromata. These growths had caused the patients dyspnoea with attacks of suffocation, and in some asphyxia had been imminent. Thanks to precision in diagnosis removal was effected *per vias naturales*. In the case of malignant tumours tracheoscopy decided the diagnosis and the time when tracheotomy would be required. Lastly, the author had been able to make an early diagnosis of cancer of the bronchus, which was verified by microscopical examination of a fragment removed by forceps, when neither the clinical aspect nor radioscopy had permitted one to suspect the nature of the affection.

Direct Posterior Rhinoscopy.

BY DR. F. LAVAL (Toulouse).

The naso-pharynx, like the trachea and bronchi, can be directly explored. By the ease with which it may be employed, especially for access to the lateral wall, direct rhinoscopy will render great services in tubal affections, and even in those of the tympanum, by enabling instrumental treatment to be carried out.

Peri-œsophageal Phlegmon Following Extraction of a Foreign Body.

BY DR. JACQUES (Nancy).

The case related by the author showed that extraction of a foreign body *per vias naturales*, even when early and easy, does not exempt the patient from further contingencies.

An adult healthy man swallowed a fish-bone and experienced an exceedingly sharp pain in the inter-scapular region. Extraction of the foreign body by means of the tube was accomplished without any difficulty thirty-six hours afterwards. The fish-bone, very sharp, was fixed at the broncho-aortic segment of the œsophagus. Some days later a peri-œsophageal phlegmon developed, characterised by an increasing general malaise, furred tongue, lividity, thoracic girdle pains, spasmodic cough, anorexia, and absolute dysphagia. Œsophagoscopy revealed a very narrow constriction just below the site previously occupied by the foreign body, bordered by edematous folds of pale grey mucosa. Spontaneous evacuation of the abscess took place followed by a rapid subsidence of all the alarming symptoms. Four coloured diagrams illustrated the œsophageal

appearances of this complication, fortunately rare in the case of swallowed foreign bodies.

Dr. GUISEZ (Paris) had frequently observed abscesses resulting from foreign bodies. He thought that whenever œdema is present it is advisable not only to remove the foreign body, but further, to make a small incision into the mucosa; one then sees a flow of pus. Abscesses are also observed as a result of operative measures for the removal of a foreign body—for example with Graefe's coin-catcher.

Dr. JACQUES (Nancy) said that œsophagoscopy should be carried out by experienced hands. He had seen the pharyngeal mucosa rasped by the œsophagoscope.

H. Clayton Fox (trans.).

(To be continued.)

Abstracts.

EAR.

Mayer, Otto (Graz).—On Affections of the Auditory Nerve in Acquired Syphilis. "Arch. Internat. de Laryngol., d'Otol., et de Rhinol.," May-June, 1911.

The author has been struck by the number of cases reported by Finger in which "606" was employed in the treatment of syphilis that had been followed by lesions of the auditory nerve and untoward symptoms attributed to affections of the auditory nerve. From the sixty-five cases placed at his disposal untreated by this remedy he has come to the following conclusions as to the occurrence of these labyrinth complications in this condition: (1) The affections of the auditory nerve may appear as early as three weeks after the chancre or six weeks from the period of inoculation. It is more frequent during the first six months but may occur as late as thirty years after. (2) In most cases the condition was ushered in by subjective noises and an absence of vertigo. (3) It is usually bilateral and frequently equal on both sides. It is rare for one ear to escape entirely. (4) While in almost half the cases there was a varying degree of vestibular involvement, in no case has he observed an isolated vestibular affection. Whereas the examination of the cases of Finger indicates preponderance of vestibular involvement, it would seem that the vestibular nerve is more sensitive to certain poisons by which the cochlear branch is little or hardly at all affected. A large number of cases may still fall to be considered in which the isolated infection of the vestibular apparatus has caused the case to pass unnoticed by the otologist into the hands of the neurologist. The author gives a new indication of the fact that affections of the auditory nerve may appear at all stages of syphilis, and that affections of the ear observed after the employment of arseno-benzol differ essentially from those due to syphilis.

J. D. Lithgow.

Buyt (Brussels).—The Symptomatology of Labyrinth Lesions due to Indirect Traumatism. "Archives Internationales de Laryngologie, Otologie, et de Rhinologie," May-June, 1911.

Some of the above lesions improve; others get progressively worse. The apparent severity of the cranial injury is no index to that of the

labyrinth. Until recently only the more severe cases were recognised; now, owing to improved methods of diagnosis, even the mildest cases can be detected by objective examination. In the examination of a suspected case of labyrinth lesion both the cochlear and the vestibular apparatuses must be examined separately, as they may be independently affected. This examination should be comprehensive, as otherwise confusion may arise where both systems are involved. Sometimes there may be only temporary and partial interference with function—or in the case of the vestibule alone, a passing hyperæsthesia.

The author describes fully an interesting case where a fall on the occiput, which resulted in a passing unconsciousness of a few minutes' duration, and which at the time showed no signs of any ear trouble, was followed by gradual, and at the end of two years complete, destruction of both the functions of the inner ear.

In a case of the kind repeated examinations should be employed in which the caloric and rotary tests will be used. A special difficulty arises where there is a predominant functional inequality of the vestibular operation, as its function has not the same measurable and absolute value as that of the cochlea. When the exact degree of involving of the labyrinth cannot be absolutely determined it will be sufficient clinically to compare the two sides; and in cases where both sides are affected the "relative quantitative analysis" of the two sides may assist, the possibility of vestibular hyperæsthesia being kept in mind. The author draws attention to the fact that when using the thermal test, even when the provoked nystagmus is slight, the patient, on closing the eyes and attempting to walk straight ahead, deviates in the direction opposite to that of the nystagmus. This last sign would, of course, only be of value where one could definitely exclude any extra-vestibular origin of the interference with equilibration, such as cerebellar disease.

J. D. Lithgow.

Day, Ewing W.—Reports of Three Cases of Mental Derangement associated with Suppurative Otitis Media. "Annals of Otology, Rhinology, and Rhinology," vol. xx, p. 388.

The first two cases, one female, aged fifty-five, and one male, aged thirty, both showed great apprehension of operation, and remind one of the cases recently described by Devine in the *British Medical Journal* for September 30, p. 747, in his paper on "The Significance of Some Confusional States." In the third case, a man, aged fifty-two, with lateral sinus thrombosis, severe and continued pain seems to have been the determining faculty in his mental condition.

MacLeod Yearsley.

MISCELLANEOUS.

Wall, Cecil (London).—Some Aids to the Diagnosis of Pulmonary Tuberculosis. "Clinical Journal," October 18, 1911.

As subsidiary to the general clinical examination, Dr. Wall discusses somewhat critically some recent aids, such as radiography, recent developments in the search for the bacillus, tuberculin tests, and the opsonic index. The use of the X rays is considered of the greatest value to confirm the observations made by other methods, and has afforded most useful information in some of the complications of pulmonary tuberculosis, as also in determining the position of the heart and any

abnormalities in the respiratory movements. The recent developments in the direction of shortened exposures have added greatly to their value. In the case of non-discovery of bacilli by the ordinary methods, the antiformin method may be employed, by which a considerable quantity of the sputum—say all that has been expectorated in twenty-four hours—may be examined. Another method is the addition of a paraffin akin to petrol, namely ligroin, to the sputum after it has been shaken up with caustic soda. Again, the faeces may be examined by the antiformin process. Dr. Inman examined the faeces of twenty-six tuberculous patients; eighteen had tubercle bacilli in the sputum, and of these sixteen had them in the faeces; of eight without bacilli in the sputum they were found in the faeces in one. This method is recommended in the case of children who do not expectorate. Bacilli separated from the sputum by the antiformin method may be cultivated in Twort's ericolin solution, and from this animals may be inoculated. Dr. Wall is not satisfied as to the value of Jousset's pepsin method of detecting bacilli in pleural effusions. He has found bacilli in cerebro-spinal fluid several times after precipitating them by means of absolute alcohol or 5 per cent. phenol. The value of the reaction to Koch's old tuberculin is recognised as showing that there has been tuberculous infection somewhere in the body, though not necessarily indicating activity of the lesion. The mode of its employment is very clearly described. A case of spinal tuberculosis is narrated, which seemed to support the view that the reaction is more marked when there is tuberculous bone disease. The test is, in the author's opinion, of little value unless it is considered in conjunction with careful clinical observation, as it has been shown, for instance, that between 40 and 60 per cent. of the working classes give a positive reaction, though there are no signs or symptoms of tuberculosis, also von Pirquet's was found positive in 4 out of 10 cases in which there was no evidence of any disease, but at the same time was negative 10 times in 124 cases of undoubted pulmonary tuberculosis. The Midhurst results were more favourable, and led to the conclusion that a negative result was of value in the exclusion of tuberculosis. Dr. Wall considers that in practice it must be admitted that, so far as adults are concerned, it is not wise to attach any very great importance either to the presence or absence of the cutaneous reaction. The simple opsonic index test was positive in 73 out of 111 cases of pulmonary tuberculosis, and negative in 38. Its value is greatly increased if it is taken after rest and again after a period of exercise. Under all circumstances Dr. Inman found it positive in 85.71 per cent. of cases which were certainly tuberculous, in 67.91 in doubtful cases, while in non-tuberculous cases it was negative in 93.33 per cent. It will be seen that this paper gives in a condensed form a large amount of up-to-date information.

Dundas Grant.

Weski, Oskar (Berlin).—Modern Dental Diagnostic Methods as Aids in Rhinology and Otology. "Zeitschr. f. Laryngol. Rhinol., etc." Bd. iii, Heft 4.

The writer calls attention to Gutzmann's apparatus for detecting the passage of air through the nose during speech. Under normal conditions air only passes when the individual pronounces M and N, but in cases of cleft palate air passes with all syllables. A suitable obturator restores the speech almost to normal. Weski rightly points out that medical men do not as a rule know much about dental pathology; it is, however, necessary to diagnose between periodontitis and pulpitis. If there be

pain on tapping the tooth the case is one of periodontitis, whereas if pain be set up by a sudden change of temperature—as by a mouthful of cold water—the case is one of pulpitis. Cases of dental caries can be diagnosed by inspection, but many apparently sound teeth are really diseased. Weski then gives details of two modern diagnostic methods: (1) the use of the induced current, and (2) the application of X rays to dental surgery. (1) The negative electrode is placed on the tooth under investigation while the patient holds the positive electrode in his hand. The normal sensitiveness of a tooth is about 3.5 cm. (Rollendeckung), whereas in early cases of pulp irritation it is reduced to 2 cm., and in the second stage of pulpitis (stage of exudation) the distance is only 1 cm. In the third stage the sensitiveness is diminished (5–6 cm.). If the disease is diagnosed the tooth may be saved by well-timed treatment. The author then gives an account of the anatomy of a tooth, and points out that each apical foramen only transmits one artery, so that in unicuspid teeth there is no collateral circulation if this vessel be occluded; the circulation in the teeth is a closed one like that in the brain or kidney. The diagnosis of “Dentikel” formation can now be confirmed by a radiograph. The author describes the method of dental radiography. Retained wisdom teeth may cause severe neuralgia, and even antral suppuration: here, again, a dental X-ray picture is of use. Traumatism, forgotten by the patient, may lead to dry gangrene of the tooth; secondary infection may set up moist gangrene, which may again pass through the apical foramen and cause periodontitis and granuloma. In all forms of inflammation of the root of the tooth epithelial cells of embryonic origin are seen in microscopic examination; these may lead to the formation of radicular cysts which somewhat resemble granulomata on the X-ray plate. Follicular cysts on the other hand arise from a tooth-follicle and surround the crown of a retained tooth. Suppuration in the antrum may be of dental origin even though the teeth in relation to the antral floor may appear perfect; for this reason it is important to test the electric sensibility of these teeth and to take a dental radiograph, which would show the presence of an alveolar recess—a condition favouring antral suppuration of dental origin. Weski allows that dental radiographs may be ambiguous like other X-ray pictures. Finally, the author calls attention to the fact that otalgia may be due to disease of the teeth. Cases due to pulpitis in which the tooth appears outwardly sound are especially difficult to diagnose.

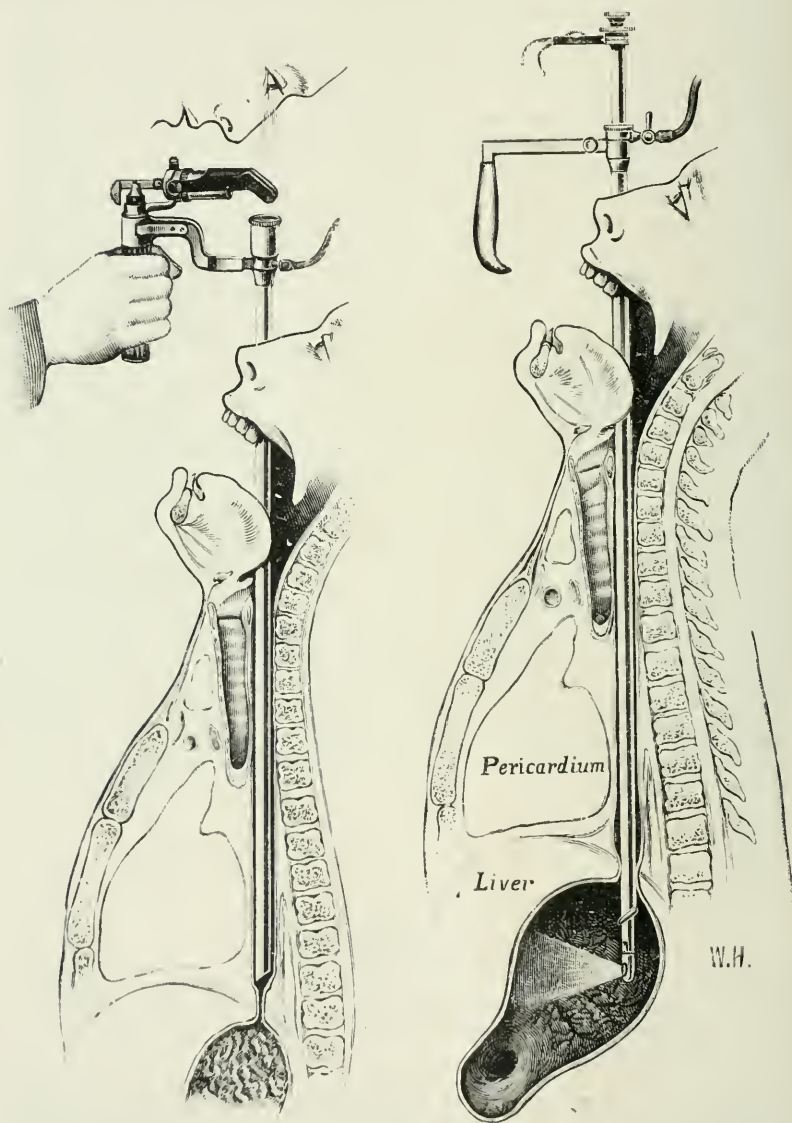
J. S. Fraser.

NEW INSTRUMENTS.

HILL'S ŒSOPHAGO-GASTROSCOPE; A MODIFICATION OF THE HILL-HERSCHELL GASTROSCOPE FOR COMBINING DIRECT AND INDIRECT VISION.

THE left-hand diagram shows Hill's direct-vision inflating œsophago-gastroscope, on the principle of the sigmoidoscope, approaching the phrenic constriction of the gullet. After the instrument has been passed into the stomach and the region of the cardia explored, with or without inflation, the Brünings' handle-lamp is removed and Killian's handle substituted;

the proximal window is also removed and the perforated cap with rubber valve inserted in its place. The indirect vision periscope can then be safely passed through the hole in the cap and down the outer direct tube into the stomach—as shown in the right-hand diagram. Inflation should be commenced before the distal end of the periscope enters the stomach to avoid soiling of the optical window and lamp.





SIR HENRY T. BUTLIN, BART., D.C.L., F.R.C.S.

THE
JOURNAL OF LARYNGOLOGY,
RHINOLOGY AND OTOTOLOGY.

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SIR HENRY T. BUTLIN, BART., D.C.L., F.R.C.S.

It is with deep regret that we have to announce the death, on January 24, 1912, of Sir Henry T. Butlin, a distinguished English surgeon, to whom laryngology is indebted for many notable advances.

The following account of his life and work we owe to one of his oldest and firmest friends, Dr. F. de Havilland Hall, to whom we desire to express our warmest thanks:

"Henry Trentham Butlin, who was the son of the Rev. W. W. Butlin, was born at Camborne in Cornwall in 1845. He was educated privately. In October, 1864, he entered at St. Bartholomew's Hospital, and thus began his long connection with the great city hospital, which, with the exception of the few months engaged in general practice, lasted until his death. In 1867 he qualified as M.R.C.S., and in the following year as L.R.C.P. In the spring of 1868 he became House-Surgeon to Mr. Paget, for whom he developed a most affectionate respect and esteem, and in whose footsteps it was his delight to tread.

After the determination of his house-surgeoney he went to Charing, in Kent, and had some experience in the difficulties of general practice—a very useful training for a consulting surgeon. It was this intimate acquaintance with the different aspects of

medical practice which made Butlin the incomparable consultant he was. He always seemed to be able to look at the patient before him from all points of view, and every general practitioner felt certain that if he took a patient to see Butlin he would get the best advice, and that nothing would be said to sap the patient's confidence in his doctor. The attractions of country practice did not long claim Butlin. In 1871 he was appointed Surgical Registrar to the Hospital for Sick Children, Great Ormond Street, and in 1872 Assistant Surgeon to the West London Hospital, and in the following December he was elected Surgical Registrar to St. Bartholomew's Hospital. He at once realised the possibilities of the post, and the foundation of his great clinical experience was laid in the careful investigation and systematic note-taking which he considered the duties of his office demanded. Hitherto the post of an Assistant Surgeon at the hospital had been almost invariably by way of the dissecting room, but Butlin showed that the faithful discharge of the duties by the Surgical Registrar would entitle him to the appointment of Assistant Surgeon. While devoting much time to clinical work, Butlin was laboriously piling up his microscopical cabinets with slides of morbid growths, so that the two great departments of medicine, clinical practice and pathology, were being concurrently pursued, and it was this combination which led to his great success in after life.

For nearly seven years he worked assiduously in the wards as Surgical Registrar, but resigned this office on his appointment as Demonstrator of Practical Surgery in 1879. Two years later he became Assistant Surgeon. In 1892 he became full Surgeon on the retirement of Mr. Marrant Baker. In November, 1902, he resigned the office of Surgeon, and was appointed Honorary Consulting Surgeon and elected a Governor of the Hospital.

So far, a brief account has been given of Butlin's career. The weekly medical journals have entered fully into the great work that he carried on for the good of the profession in the University of London, the Royal College of Surgeons, and the British Medical Association.

Though never very robust, and of late years in very indifferent health, he always appeared to bear in mind the solemn warning, 'the night cometh when no man can work,' and he devoted himself to the task before him, never sparing any exertion to do whatever he had undertaken with all his might.

The readers of the JOURNAL OF LARYNGOLOGY, RHINOLOGY, AND OTOTOLOGY will naturally like to know what Butlin did in respect

to diseases of the throat. His first introduction to this special line of work was in 1880, when he succeeded Sir Lander Branton in the Out-patient Throat Department at St. Bartholomew's Hospital. The question of the desirability of having specialists in charge of the nose and throat department at the various hospitals has now been settled in their favour; but Butlin's success proves that there is something to be said on the other side. Of course the fact is, that whatever Butlin took up he did well; but there is no doubt that his previous varied experience was of inestimable service to him when he came to grapple with obscure affections of the throat.

If all men, who intend to devote themselves to special branches of the profession, would only have a thorough general training in medicine previously, there would be less of that narrow specialism which does so much harm in many directions. Butlin's natural dexterity soon enabled him to master the technique of laryngoscopy, and he rapidly became an expert in the art. Under his fostering care the department at St. Bartholomew's grew rapidly, and he trained a series of clinical assistants, who have since done good work. At the time when Butlin first began to take an interest in diseases of the throat the speciality was not held in very high repute by the profession. In 1893, however, the foundation of the Laryngological Society gave an impetus in the right direction, and since that time the department has taken its proper place as one of the recognised branches of medicine. Butlin, who took an active part in the formation of the Society, was keenly interested in its work, and was for many years a regular attendant at the meetings.

In 1897 he succeeded Dr. Felix Semon as President, and held office for two years. He was an ideal president, courteous, and conciliatory in his manner, and always ready with some remark on the case under discussion which helped to elucidate the true state of affairs. Butlin showed many cases of interest at the Society's meetings, and also exhibited numerous pathological specimens, among which should be specially mentioned the œsophageal pouches he had removed.

In considering the services Butlin rendered to the department of Laryngology, there must in the first place be recorded the wholesome effect produced by the example of a leading English surgeon devoting so much attention to this special branch, which had formerly been a kind of Cinderella in the medical family. Then his great surgical dexterity and success and the manner in

which he tackled the most formidable operations in cases of malignant disease of the mouth and throat won universal admiration. His performance of thyrotomy for laryngeal cancer was a bold step, in view of the fact that Paul von Bruns had in 1879 absolutely condemned this operation. It had consequently fallen into disuse, as up to the time, about eight years later, when Butlin revived the operation, it had been undertaken in much too advanced cases. As soon as Semon had indicated the various signs which enabled the early diagnosis of laryngeal malignant disease to be made with a fair degree of certainty, Butlin came forward and showed what a successful operation it was if undertaken at an early stage. At the meeting of the Medical Society of London on February 12 Dr. StClair Thomson read a paper on 'Intrinsic Cancer of the Larynx treated by Laryngo-fissure, with 80 per cent. of Lasting Cure.' Both the reader of the paper and Mr. Herbert Tilley read extracts from letters they had received from Butlin in reference to cases he had seen in consultation with them, and they and the other speakers bore witness to their indebtedness to Butlin for advice and assistance in the performance of this operation. Sir Felix Semon spoke most pathetically of the loss which they had all sustained by his death.

Attention must also be directed to the operation, which he planned, and carried out so successfully in five cases, for the removal of pressure pouches of the œsophagus. Another notable contribution to surgical science was his advocacy of crico-tracheotomy in cases of emergency, and he invented a suitable cannula for the purpose. Besides his contributions to the discussions of the Laryngological Society and papers in the *Lancet* and *British Medical Journal*, Butlin wrote a monograph on 'Malignant Diseases of the Larynx,' on 'Diseases of the Tongue,' and on 'The Operative Surgery of Malignant Disease,' in which several chapters were devoted to diseases of the upper respiratory tract.

His literary work is distinguished by its lucidity and straightforwardness. Butlin was not a man to obscure his meaning in a cloud of words, consequently his articles afford excellent reading and are a model of scientific precision. He has left behind him the example of an English gentleman, who did much to advance the interests of the profession, who was a brilliant general surgeon, while at the same time he was a distinguished laryngologist; he was a warm-hearted and firm friend, and much beloved by his patients for his kindness."

DR. E. S. YONGE.

THE untimely death of Dr. E. S. Yonge has deprived the medical profession of a zealous and capable worker in the domain of rhinolaryngology. After graduating in Edinburgh in 1891, Dr. Yonge proceeded to the continent in order to study more especially diseases of the throat and nose in Vienna, Berlin, and Paris.

Shortly after his return he was appointed Assistant Physician to the Manchester Hospital for Consumption and Diseases of the Throat, and at the time of his death was Physician to the Hospital and to the Crossley Sanatorium at Delamere.

Inheriting as he did a marked literary turn of mind his contributions to medicine were both scholarly and practical.

In addition to his recent work upon "Diseases of the Nose and Throat," the preparation of which it is feared did much to undermine an already weakened system, he was the author of an excellent and suggestive manual on "Polypus of the Nose." As an original investigator he was, perhaps, best known for his operation for division of the nasal nerve in cases of paroxysmal rhinorrhœa and hay-fever. As a colleague he was always courteous and ready to help in times of difficulty, while his kindly disposition endeared him to his numerous friends and patients.

W. M.

**REPORTS FOR THE YEARS 1910 AND 1911 FROM THE
EAR AND THROAT DEPARTMENT OF THE ROYAL
INFIRMARY, EDINBURGH.**

Under the charge of A. LOGAN TURNER, M.D., F.R.C.S.E., F.R.S.E.

PART I.

AN ANALYSIS OF 123 CONSECUTIVE CASES IN WHICH
OPERATIONS WERE PERFORMED FOR THE RELIEF
OF THE MASTOID, LABYRINTHINE AND INTRA-
CRANIAL COMPLICATIONS OF SUPPURATIVE OTITIS
MEDIA.¹

BY J. S. FRASER, M.B., F.R.C.S.Ed.,

Assistant Surgeon; and

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It will be generally agreed that there is a common tendency for specialists and others to exhibit and record isolated cases in

¹ Read at the meeting of the Scottish Society of Otology and Laryngology held at the Royal Infirmary, Edinburgh, on November 25, 1911.

which operation has been successfully performed for the cure of purulent labyrinthitis, otitic sinus thrombosis, meningitis and brain abscess. Such records give a very erroneous view of the mortality of these complications and may lead to error in the compilation of statistics. At the second meeting of the Scottish Society of Laryngology and Otology (Glasgow, May, 1911), one of us (J. S. F.) suggested that no member should exhibit such cases unless he was prepared at the same time to state—(1) the number of cases of the same kind observed by him; (2) the number of cases operated on; and (3) the mortality. The speaker was, very naturally, at once challenged to give his own results—hence this paper.

We may divide the series of 123 cases into four groups:

A. *Thirty-two acute cases* in which the Schwartz operation was performed: in six of these cases the radical operation was completed later on, while in one the modified radical operation was performed. (Five deaths—three from meningitis, in two of which labyrinth suppuration was present, one death from septicæmia, and one under an anæsthetic.)

B. *Seventy-eight chronic cases*:

(1) Eleven cases in which the modified radical operation was performed.

(2) Fifty-two cases in which the radical operation was performed.

(3) Four cases of successful operation on the labyrinth.

(4) Two cases of successful operation for venous thrombosis; and—

(5) Nine fatal cases (four with purulent meningitis, in three of which labyrinthitis was present; one from meningitis and sinus thrombosis; one from sinus thrombosis and pyæmia; one from temporo-sphenoidal abscess, labyrinthitis and meningitis; one from cerebellar abscess, with early meningitis; and one from status lymphaticus—acute sepsis?)

C. *Twelve tubercular cases*: one death from miliary tuberculosis (the inner ear was infected by tuberculosis).

D. *One malignant case*.

A. Acute Cases.

Leaving out of account in the meantime the five fatal cases, which are given in detail later on, the following statement contains the particulars in regard to the twenty-seven non-fatal cases.

The age of the patients varied from 6 months to 69 years. Age

in decades: First, 5; second, 9; third, 1; fourth, 5; fifth, 4; sixth, 1; seventh, 2. The average age was $25\frac{1}{2}$ years.

Side.—The left side was affected in eleven cases and the right in sixteen cases.

Cause.—This was ascertained in only 12 cases: Coryza 3, bathing 3, influenza 2, pneumonia 1, measles 1, diphtheria 1, sore throat 1.

Duration.—Varied from seven days up to two months, the average period being 4.7 weeks.

Hearing.—Also varied, but the average before operation was—conversation voice heard at 3 ft.

Indications for Operations.—Mastoid swelling in 18 cases (œdema or abscess). Mastoid tenderness combined with sagging of the meatal wall or bulging membrane—8 cases. Facial paralysis 1 case. (Bier's treatment was tried in two cases and failed to cure, and in two other cases there was a sinus over the mastoid at the time of operation.)

Findings.—Subperiosteal abscess in 9 cases; erosion of mastoid cortex in 11 cases; sigmoid sinus exposed by disease, 8 cases; in 11 the disease extended down to the tip of the mastoid, necessitating removal of this structure (in three of these there was abscess formation in the digastric fossa); in 3 the disease extended into the posterior root of the zygoma; an extra-dural abscess was present in 3 cases; while in 1 case the external semi-circular canal was injured at operation (modified radical following the Schwartz operation).

Complications.—One patient developed diphtheria after operation and one scarlet fever; in a third case there was persistent œdema of the mastoid region after operation and a general urticarial eruption appeared (JOURN. OF LARYNGOL., RHINOL., AND OTOL., January, 1910). In six cases the Schwartz operation had to be followed by the radical, and in one case, by a modified radical operation. In two cases symptoms of serous labyrinthitis developed, but the patient recovered without further operation. One patient developed an abscess in the neck which necessitated a counter-opening in addition to removal of the tip of the mastoid. In this case also there was thrombosis of the cavernous sinns of the opposite side, and the patient completely lost the sight of that eye, but the cavernous sinus and eye on the diseased side were not affected.

Bacteriology.—A bacteriological examination was made in 15 cases. In 6 a pure culture of the *Streptococcus pyogenes* was found: *Streptococcus anginosus* in 1 case; streptococcus and

staphylococcus 1 case; streptococcus and pneumococcus 1 case; streptococcus combined with Gram + and Gram - bacilli 1; staphylococcus alone 3 cases; pneumococcus (pure culture) 2.

Result.—This is known in only 21 of the 27 cases. The suppuration was cured and the hearing returned to normal, or nearly normal, in 10 cases; in 6 others the suppuration was cured, but the hearing distance was markedly reduced (in two of these the radical operation had to be performed); the hearing is reduced and discharge continues in 2 cases. Three of the patients were too young to have hearing tests carried out, though the ear was perfectly dry. We thus see that, leaving aside the fatal cases, the suppuration was found to be cured in all but two of the twenty-one cases which reported.

Fatal cases.—The following five fatal cases, occurring in the course of acute suppurative otitis media, are *not* included in the foregoing summary, which refers only to twenty-seven cases in which the patient recovered.

CASE 21.—Mrs. S —, aged fifty-six, was admitted December 21, 1907, with history of acute pain in the left ear three weeks before: the pain was soon followed by discharge, and patient improved until one week before admission when the pain recurred; on day before admission headache commenced. December 21, 1907.—*Examination.*—Temperature 103° F., patient rather drowsy and mutters to herself. Frontal and occipital headache; nausea, but no vomiting; slight mastoid tenderness but no swelling. Discharge from left ear; swelling of meatal walls; cerebro-spinal fluid turbid and under pressure; no bacteria in films or on culture, but many polymorphs. Temperature rose at night to 105° F. Question of influenza and cerebro-spinal meningitis considered. December 22, a.m.—Patient feels better; temperature 103° F., optic discs normal; Kernig + both sides. 8 p.m., Condition worse; severe headache and pain down spine; face livid. December 23.—Temperature 103° F., slight delirium; no aphasia; mastoid tenderness and sagging of meatal wall increased. *Operation.*—Lumbar puncture on table; fluid more turbid, but pressure apparently less. Very extensive disease of mastoid; pus thin and watery (no bacteria in films or culture); dura of middle fossa exposed and found to bulge; crucial incision; convolutions congested, but no layer of pus found. December 24.—Restless night; morphia given; patient died 12.30 a.m. to-day. No *post-mortem* obtained.

Note.—The fact that the organism failed to grow on culture media was possibly an evidence of extreme virulence.

CASE 23.—G. M —, male, aged four, had discharge from the right ear on January 3, 1908. Temperature 103° F. On January 6, 1908, the left ear became painful, and on the following day discharge and mastoid swelling supervened. Boy admitted January 7, 1908. *Operation*, January 8.—Left membrane bulging slightly; left mastoid cortex normal; pus in superficial cells (*Streptococcus pyogenes*, pneumococcus and *Staphylococcus aureus* on culture); antrum very large and contained thin pus; paracentesis; removal of tonsils and adenoids. January 11.—Patient has pain in right elbow; Mr. Caird advised hot fomentations; temperature 102° F., heart-sounds pure. January 14.—Evening

temperature gradually rising—to-night temperature 103.8° F., pulse 150; patient is jaundiced; right elbow-joint swollen; mastoid wound dressed and found inactive. January 16.—Anti-streptococcus serum injected; jaundice more marked; elbow less swollen; lips and tongue dry and cracked. January 19.—Anti-pneumococcus serum given; temperature lower. January 24.—Entire absence of reaction in mastoid wound; whole of membrana tensa disappeared; mastoid cavity and meatus contain foul pus. January 26.—Mr. Caird advised incision of right elbow-joint and a quantity of foul pus was evacuated (streptococcus); jaundice almost gone. February 1.—Patient died. *Post-mortem*.—The subdural and subarachnoid spaces show excess of fluid; convolutions flattened; pons, medulla and cerebellum show recent œdema; ventricles dilated; cerebrum on section shows œdema only. Toxic changes in organs. In the operation cavity in the left temporal bone no granulations had formed in the three weeks after operation.

Remarks.—This case appears to have been one of septicæmia.

CASE 29.—D. McG.—, male, aged twenty-three, suffered from influenza six weeks before admission; pain in *right* ear all this time, but no discharge. Two weeks before admission became worse, and had attacks of sickness and shivering.

Examination, March 6, 1908.—Temperature 98.3° F. *Right* membrane almost normal, only slight opacity; no bulging of membrane or meatal wall; whisper at two feet. Auricle displaced by mastoid swelling. Wilde's incision had been made before admission, but pus not evacuated. Patient was an insurance agent and was anxious to get back to work as soon as possible, as his place would not be kept open for him for long. March 6, 1908, *Operation*.—Subperiosteal abscess evacuated; two small perforations of mastoid cortex; granulations protruding; abscess in superficial part of mastoid (no organisms in films or culture). Antrum not opened as healthy bone present between abscess and antrum; tip removed; operation cavity allowed to fill with blood-clot; wound closed. March 11.—Temperature and pulse satisfactory; wound dressed, slight redness of mastoid region; edges not yet united. March 13.—Patient insisted on going back to work. Wound almost healed, but slight serous oozing at lower end. Whisper heard at *twelve feet* by right ear. March 18.—Patient re-admitted in comatose condition. Friends stated that he did not sleep well on night of March 13, and complained of headache. During next two days he stayed in bed and got powders for his headache. Patient advised to return to Infirmary on March 16, but would not do so. March 17.—Vomiting commenced; morphia injected. On re-admission, March 18.—Temperature 102° F., pulse 80. Right pupil dilated and does not react; discs normal; knee-jerks and plantar reflexes absent; cerebro-spinal fluid under pressure and turbid (films show numerous pus-cells and diplococci). Right membrane grey, with slight redness along malleus. Wound is closed, but edges show slight redness. March 19.—Right eye almost completely paralysed; temperature 106.8° F.; coma deepened and patient died.

Post-mortem.—Basal meningitis: inner aspect of mastoid wound is necrotic and bone in roof of operation cavity also diseased. Culture from purulent exudate on base shows pure culture of streptococcus. (The base of the brain, the mastoid wound cavity and a microscopic section of the inner ear were shown: there was pus in the scala tympani in the region of the round window.)

Remarks.—This operation was performed at a time when American surgeons were strenuously advocating the blood-clot method of healing; the death is attributed partly to this method and partly to the fact that the patient insisted on leaving hospital in order not to lose his situation. Had he remained in hospital, a second operation would have been performed when headache appeared.

CASE 50.—A. J.—, male, aged twenty-three, first seen January 30, 1909. Patient stated that he caught cold fourteen days ago and that evening had intense pain in *right* ear. Discharge commenced next day, but headache and vomiting now supervened. These symptoms passed off in three or four days, but returned on day of admission, January 30.

Examination.—Right meatus full of pus. Small perforation of membrane. No mastoid tenderness. Temperature 102.2° F., pulse 64. Patient lies on *left* side, curled up in bed. Slight spontaneous nystagmus to left. Cerebro-spinal fluid turbid, and contained streptococci. Patient too ill for auditory and vestibular tests. *Operation*, January 30, 1909.—Pus flowed out on first blow of gouge; mastoid process pneumatic. Pus in tip, which was removed. Bony walls of antrum softened. Sigmoid sinus exposed but appeared healthy. Dura of middle and posterior fossæ exposed; crucial incision in cerebellar dura. Pus evacuated. January 31.—Second lumbar puncture; streptococci present. Temperature 103.4° F. February 1.—Severe frontal headache continues. Paresis of right external rectus; diplopia; temperature 102° F. February 3.—Morphia injected. Patient died 9 a.m.

Post-mortem.—Basal meningitis (pure streptococcal).

Note.—Microscopic sections of the inner ear showed purulent labyrinthitis.

Remarks.—The case was one of purulent labyrinthitis and meningitis following acute suppurative otitis media; it is possible that the labyrinth operation might have saved the patient.

CASE 100.—G. M.—, male, aged twenty-four. First seen October 15, 1910. Seven years ago patient was severely burned over abdomen in a boiler explosion; he recovered after a long illness, but has suffered from diabetes mellitus since that time. For the last year or two he has been very feeble and has become emaciated. About one month ago he began to suffer from pain in left ear and a few days later discharge commenced; for four weeks the left mastoid has been swollen and tender; ten days ago a swelling formed in the neck beneath sterno-mastoid. Patient's doctor made incision in neck four days ago, but evacuated only a little pus.

On examination, October 15, 1910.—Patient very feeble; pulse rapid and weak; great pain on moving head; marked mastoid tenderness on left side; left meatus contains semi-dry pus. Whisper heard at three inches by left ear; ordinary voice one yard. Brawny swelling over region of insertion of left sterno-mastoid. Urine contains 16 gr. of sugar per ounce. Patient's relatives were informed that a mastoid operation was necessary, but that, in patient's feeble state, it might be dangerous.

Operation.—Chloroform was given and patient apparently took it well. There was great bleeding from superficial tissues, pus oozing through cortex at various points (on culture, staphylococcus). Mastoid process soft. Tip of mastoid process removed; pus found in digastric fossa. Anaesthetist reported pulse to be very feeble, and an injection of strychnine was given. Mastoid antrum rapidly opened to complete operation, but anaesthetist again reported pulse very feeble; respirations continued for two minutes after pulse had ceased. In spite of hot cloths over heart, strychnine and brandy, the pulse was not felt to beat again, nor were heart-sounds heard. Artificial respiration was kept up for twenty minutes but was then abandoned.

Summary of Five Fatal Cases in the Course of Acute Suppurative Otitis Media.—Three deaths from meningitis (in two at least of these labyrinthitis was present); one death from septicæmiæ; and one under the anaesthetic (chloroform).

B. Chronic Cases (78).

(See Classification, p. 134.)

B 1. Modified Radical Operations—11 Cases.

Age.—The youngest patient was 3 years and the oldest 49. Age in decades: First, 2; second, 5; third, 2; fourth, 1; fifth, 1; average age, 20.

Side.—The left side was operated on in two cases and the right in nine.

Causation.—Measles 2, influenza 1; rest unstated.

Duration.—Varied from 1 to 20 years; average duration 12 years.

Examination.—In most of the patients the perforation was in the central part of the membrane. The hearing in most of the cases was good, the ordinary voice being heard at from 2 to 15 ft.

Indications.—The continuance of discharge, in spite of treatment, formed the only indication in two cases. Recurrent polypi in three; mastoid pain and tenderness in five cases. In the remaining case a sinus was present over the mastoid.

Findings.—In nine of the cases the mucosa of the antrum was congested and thickened, and the cavity contained a little pus or muco-pus. In two cases cholesteatoma was present. In three cases a polypoid projection through the existing perforation was removed through the meatus.

Bacteriology.—Bacteriological examination was carried out in only three cases, and in two of these cholesteatoma was present. In one of these latter pneumococci, combined with *B. coli*, were found, and in the other a streptococcus in combination with *B. proteus*. In the remaining cases diplo- and streptococci were found.

Result.—This is known in six cases. In three the ear is quite dry and in two of these the hearing distance is more than doubled, while in the remaining one it is considerably reduced. Of the other three cases, in which there is still slight discharge, the hearing is improved in one and stationary in two.

B 2. Radical Mastoid Operations (52 Cases).

Age.—The ages varied from 3 to 68 years. Age in decades: First, 9; second, 18; third, 13; fourth, 6; fifth, 2; sixth, 3; seventh, 1. The average age was 21.

Side.—Left in twenty-three and right in twenty-nine cases. In about 50 per cent. of the patients there was bilateral suppuration.

Causation.—This is stated in 23 cases: Measles 11, scarlet fever 4, influenza 2, injury 2, diphtheria 1, pneumonia 1, coryza 1, teething 1.

Duration.—Varied from 6 months to 56 years. Average 12 years.

Indications.—In the majority of cases more than one indication was present. Mastoid pain and tenderness or abscess over the mastoid formed the main indication in 34 cases: Cholesteatoma (diagnosed before operation) in 13, giddiness and vomiting in 11, recurrence of polypi and continuance of discharge in spite of conservative treatment in 7, sinus over the mastoid in 6, rigors in 3, facial paralysis in 1, and failure of ossiculectomy to obtain a cure in 1 case.

Hearing Tests.—The hearing was bad or totally lost in 19 cases (conversation voice heard at 6 in. or less). Moderate hearing in 18 cases (conversation voice heard at from 6 in. to 6 ft.). In one case only was the hearing good.

Findings.—Erosion or sinus in the mastoid cortex in 18 cases. Cholesteatoma in 25 cases (only 13 diagnosed before operation). Malleus or incus or both ossicles absent or carious in 14 cases, exposure of dura mater (including sigmoid sinus) by disease in 14 cases, and extra-dural abscess in 4 cases. Polypoid condition of mucosa of antrum and tympanum (including aurial polypus) was a prominent feature in 14 cases. The external semicircular canal was eroded in 4 cases, but was not opened. In three cases the facial nerve was exposed and twitched during the operation. Finally, in seven cases little disease was found, the antrum only containing a small quantity of mucoid fluid, and the lining membrane showing only slight thickening.

Technique.—The incision was always made in the hair margin. The bone was removed by means of the Vienna set of gonges. In many cases the cholesteatoma matrix was left. Attempts were made by means of burrs to close the Eustachian orifice, but these were by no means always successful. Throughout the operations peroxide of hydrogen was used as a disinfectant and hemostatic. Körner's flap was employed in the great majority of cases; at first a portion of the cartilage of the meatal-wall was dissected out, but in the later series of cases this was not found necessary. The posterior wound was closed with clips. The cases were first dressed at the end of five days if all went well, the clips and

stitches retaining the meatal flap being removed. The deep packing was also removed, and the cavity swabbed out with peroxide of hydrogen; the cavity was again packed and the ear bandaged for two days. At the end of this period it was, as a rule, possible to leave off all external dressing, and to treat the case twice daily like one of suppurative otitis media, viz. by the instillation of peroxide of hydrogen, followed by syringing with boric lotion or lysol, and finally by the use of spirit drops. During the daytime the meatus was left open, but at night a little cotton-wool was introduced in order to protect the pillows.

Bacteriology was reported upon in eighteen cases. A pure culture of the *B. proteus* was obtained in five, while the *B. proteus* was combined with *B. coli* in one case, with diplococci in one case, with streptococci and *Cladothrix putrogenes* in one case, with diphtheroids and Gram-bacilli and staphylococci in one case, and with leptothrix and streptococci in one case. In two cases diphtheroids were combined with *B. pyocyaneus*. In one case *B. diphtheriæ* was found in pure culture, and in another case in combination with Gram-bacilli. Streptococci and *B. pyocyaneus* were found in one case, streptococcus and staphylococcus in one case, while in another streptococcus was found in pure culture. Finally, in one case pneumococci with Gram-bacilli were recovered.

Progress.—In thirty-four cases the progress was uninterrupted. In eight excessive granulations formed, and six of these were skin-grafted. In three cases giddiness and nystagmus to sound side appeared (serous labyrinthitis?). In one case a keloid developed in the posterior wound. In another case the sigmoid sinus was exposed and opened on account of repeated rise of temperature, but was found healthy: the patient recovered. In three cases slight facial paresis followed the operation, but subsequently passed off completely. One patient developed scarlet fever and one erysipelas, and had to be removed to the fever hospital. In two cases perichondritis of the anricle followed the radical operation, and led to considerable deformity. In these cases the *B. pyocyaneus* was present in the pus before operation.

Results.—Only twenty-six of the fifty-two cases have been seen at a period longer than six months after the operation. Seventeen of these twenty-six cases were quite dry; in the remaining nine some moisture was still present. In six of the latter nine cases the moisture appeared to be due to failure to obtain closure of the Eustachian tube, and the discharge was not offensive. In several

of the dry cases there was bulging of the lining membrane of the anterior part of the cavity on performance of Valsalva's inflation. The majority of the patients who reported stated that they took no care of the cavity as formed by the operation, although all patients were instructed that occasional syringing was necessary after the radical mastoid operation.

The *effect* of the radical mastoid operation *on the hearing* was noted in twenty-two; in fifteen the hearing was improved, in four unchanged, and in three only was the hearing diminished.

(*To be continued.*)

THE DIAGNOSTIC VALUE OF THE SUCTION-SYRINGE IN MAXILLARY ANTRAL SINUSITIS.¹

By P. WATSON-WILLIAMS, M.D.LOND., ETC.,

Lecturer on Diseases of the Ear, Nose and Throat, University of Bristol; and
in charge of the Ear, Nose and Throat Departments, Bristol Royal
Infirmary; President of the Laryngological Section,
Royal Society of Medicine, etc.

THE antral exploring syringe that I usually employ has a hollow curved needle with a larger bore than the Lichtwitz straight exploring needle and cannula, while the curve is considerably longer, and has a sharper bend than Krause's trocar, so as to pierce the middle meatus. A shorter-curved needle may be used through the inferior meatal wall.

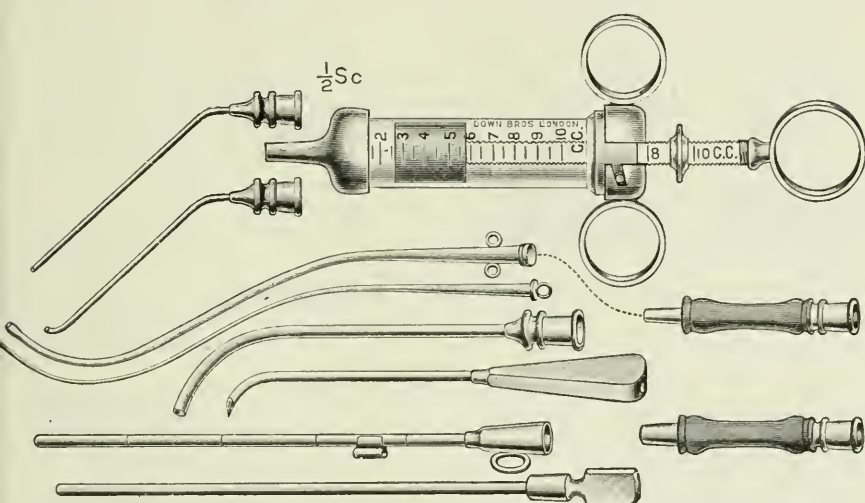
It is readily inserted, and after previous cocaineisation causes little or no pain. For diagnostic purposes the syringe is nearly filled with distilled water, which is quickly injected into the cavity of the antrum and at once sucked back into the syringe, so that one obtains a sample of the antral contents.

In a large proportion of cases of antral suppuration the diagnosis by other methods, without washing out the antrum, is easy and conclusive, but if, owing to the scantiness of purulent discharge, one has to rely on transillumination tests, errors in diagnosis are difficult to avoid. It is well recognised that a positive result from transillumination may be due to unusual thickness of bone, or an undeveloped antral cavity. And it is generally held that a good transillumination with well-marked infra-orbital *tâche*, and particularly with a good pupil reflex, is sufficient to negative the presence of pus in an antral cavity. But since I have used the

¹ Read at the Birmingham Meeting of the British Medical Association, July, 1911.

antral suction-syringe as a routine method in every case in which antral disease is suspected, my faith in the value of transillumination has been rudely shaken. In quite a number of cases where my suspicions of antral suppuration seemed to have been negatived by the excellent transillumination with pupil reflex, the use of the syringe has revealed thick pus in greater or less amount in the explored antrum, and in other cases blobs of mucus with or without pus. I will briefly refer to one instance in point:

Mrs. L—— complained of a recurrent headache resembling migraine, and her headaches had for years been considered neurotic. Her mental confusion and periods of depression were of many years' standing. She had been treated by

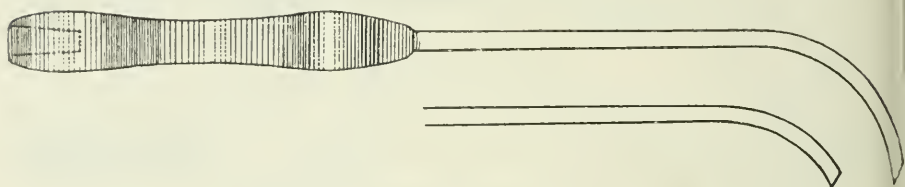


Universal syringe, with interchangeable ends for middle ear and attic, frontal sinus, maxillary antrum, and sphenoidal sinus respectively.

hypnotic suggestion, had undergone prolonged rest cure in Switzerland, and although she was intellectually far above the average, she began to think everyone else must be right and that she must be hysterical, since so many doctors had assured her there was no real disease in her case beyond neurosis. The symptoms, in my opinion, were exceedingly suggestive of sinus suppuration, probably sphenoidal. Antral transillumination, yielding a good infra-orbital *tâche* and pupil reflex, seemed to negative the possibility of any trouble there, and I had the patient for some days under observation to watch for the appearance of pus; but neither by anterior nor posterior rhinoscopy could anything be detected, and her visual fields were normal. She returned home, but I explained to her medical attendant that I was convinced she had sinus trouble, although I could not find sufficient evidence to warrant opening the sphenoidal sinus, and suggested she should return later. She developed a feverish cold, with increased discharge, and came again to see me. Once more the antral transillumination test was negative, with pupil reflexes, though I think one had to use a somewhat brighter light than usual. But the symptoms led me to place her under general anaesthesia to explore

the maxillary antra and sphenoidal sinuses with a view to operation. The antral syringe sucked up a thin film of thick pus from both sides, and the sphenoidal sinuses also yielded muco-pus. A double radical intra-nasal antral operation and free removal of the anterior walls of the sphenoidal sinuses completely changed the aspect of her life, and restored her mental balance and impaired health. The important point is that had I not explored the antral cavities I should have left her unrelieved, except for the opening of the sphenoidal sinuses.

This is by no means an isolated case, and I have no doubt that I have overlooked a good many cases of antral sinus disease from undue reliance on transillumination test when other symptoms were insufficiently marked for making a diagnosis. But the use of the syringe is of even greater value in cases where there is sinusitis without evidence of suppuration, that is to say, the early cases of infection by organisms which set up recurrent catarrhal attacks, at the outset simulating an ordinary cold, but without the formation of pus. Doubtless in course of time the infection becomes



Exact size and curve of the author's antral exploring cannula for entry through the *middle meatus*. Below is shown the curve of the cannula for entry through the *inferior meatal wall*.

more virulent, and purulent sinusitis develops. But it is obviously of advantage to determine the existence of sinusitis in the earlier stages and avoid the more pronounced pathological changes in the mucosa, as well as the interference of health, that precede the further development of the sinus disease. I append notes of one example in point :

Major C — came with recurrent nasal catarrh of long duration, but declared that he had no post-nasal discharge. Some sticky muco-pus could be seen in the left nasal passage, but antral transillumination was normal on both sides, with a good pupil reflex. The syringe yielded a clear, straw-coloured fluid *i.e.*, the distilled water returned straw-coloured from the left antrum, and a few small blobs of muco-pus from the right.

Cultures from the fluid yielded pure growths of Gram-positive staphylococci. Both antra were opened by the intra-nasal route and vaccines prepared, as both antra were found to contain muco-pus at the time of operation.

On the other hand, we meet with cases in which the history and symptoms are very strongly suggestive of latent antral

suppuration, and when these suspicions are supported by a bad transillumination, with absent pupil reflex, it is impossible to feel sure about the diagnosis merely because no pus can be seen in the nasal passages unless one has an unequivocal test such as the antral suction-syringe affords.

I have found this syringe of the greatest value in doubtful cases, and in such cases as I have instanced I should have been unable to make a correct diagnosis without the help of the syringe; and consequently I am quite sure that I must have failed to recognise some cases of early antral suppuration before I used the syringe for diagnostic purposes.

Dr. N. C. HARING said that as regards diagnostic puncture of the maxillary sinus, a sharp-pointed double cannula, introduced into the sinus through the inferior meatus, had been in his practice the easiest method, allowing one to wash through the sinus, and collect the pus which is forced out through the return tube, uncontaminated by contact with the nasal mucosa.

Dr. BROWN KELLY said that Dr. Watson-Williams's suction syringe was the revival of an old method of diagnosis. Moritz Schmidt, fully twenty years ago, introduced a Pravaz syringe, fitted with a sharp, curved steel needle for exploratory aspiration of the antrum from the inferior meatus. Subsequently the speaker had the syringe fitted with cannulas for the other accessory cavities. Schmidt's syringe was superseded by the Lichtwitz trocar and cannula.

THE EDUCATION OF THE MEDICAL STUDENT AND OF THE SPECIALIST IN DISEASES OF THE THROAT, NOSE AND EAR, GERMANY.

THE POSITION OF OTO-LARYNGO-RHINOLOGY IN THE GERMAN MEDICAL SCHOOLS.

By PROFESSOR VON EICKEN (Giessen).

IN Germany, as indeed in most European civilised countries, our special branch of medicine has not yet attained to the position of independence which ophthalmology and psychiatry enjoy. Medicine, surgery, gynæcology, ophthalmology, and psychiatry are represented by regular professors in all the German schools of medicine, and they, together with the representatives of anatomy, physiology, pathological anatomy, pharmacology and hygiene, constitute the faculty of medicine. So far as our own branch is concerned the only Universities that possess professors are those of Berlin, Giessen, Halle and Rostock. In the first-named otolaryngology and rhino-laryngology are represented by separate

professores ordinarii; in the others these two departments are united under one professor.

The remaining universities differ considerably from one another in certain respects. With the exception of Freiburg, Königsberg, Munich and Würzburg, where, as in Berlin, the distinction is drawn between otology and laryngology, these two subjects are always taught together. In by far the great majority of instances the representatives of the speciality take rank as academic (*etatmässige*) teachers; that is to say, that as far as honorarium and teaching facilities are concerned, they occupy the same grade as professors.

In addition to these differences, there are also several others. For example, in some of the universities properly constituted clinics for diseases of the throat, nose and ear do not exist. Berlin, Freiburg, Munich and Königsberg possess university clinics for disease of the ear, but only Berlin and Freiberg have separate laryngological clinics, while in Breslau, Halle, Heidelberg, Jena and Rostock there are combined oto-laryngological clinics. In Tübingen an oto-laryngological department is in process of formation, and it is said that in Giessen one is about to be constituted this year. Neither Bonn, Erlangen, Göttingen, Kiel nor Würzburg possess university clinics for our speciality. In these centres the patients are treated in private hospitals. In Greifswald the representative of the speciality is provided with a limited number of beds in a particular ward under the control of the surgical director.

These varying conditions act as obstacles to the desire to see our speciality figuring in the medical faculty as an individual unit. Moreover, they also entail many difficulties in the following out of the modern methods of professional examination. The new regulations for the examination for medical practitioners from the year 1901, which hold good for the whole German Empire, lay down the rule, with regard to education in oto-laryngology, that the candidate shall have attended regularly for six months as clinical assistant (*Praktikant*) a special clinic or polyclinic for throat, nose and ear diseases. As evidence of this the candidate must be able to show a special certificate (the so-called "clinical assistant's certificates"—*Praktikantenscheine*).¹

The examination in laryngo-rhinology nominally falls to the lot of the examiner in medicine, and that in otology to the

¹ In nearly all the schools the student is required to attend a preliminary course of systematic preliminary lectures (*Propädeutik*) in oto-laryngology before he is allowed to become a clinical assistant (*Praktikant*) in the clinic.

examiner in surgery. The statute dealing with the examination in medicine bears the following addendum: "The testing of the knowledge requisite for a medical practitioner must also include an acquaintance with the knowledge and treatment of diseases of the throat and nose, including the use of the laryngeal mirror"; while that referring to the examination in surgery runs: "The candidate . . . has to show an acquaintance with the knowledge and treatment of diseases of the ear." A further paragraph reads: "On the part of the Central Board (of Examiners) the examination in diseases of the throat and nose may be allotted to the examination in surgery, and that in diseases of the ear to the examination in medicine."

It must be acknowledged that this pronouncement is, at least, evidence that our speciality is officially included in the examination of candidates for qualification in medicine. But if from this we feel satisfied that every candidate in medicine nowadays has to undergo an examination in oto-laryngology, then we are doomed to be grievously disappointed. The reason for this unsuspected fact, so contrary to statutory requirements, is not far to seek. On the one hand, it is the exception to find medical and surgical clinics capable of supplying the requisite examination material, and further—and this must be openly stated—the directors of these clinics do not, as a rule, possess a thorough knowledge of our special work.

No change in these matters can be expected until the specialists themselves are entrusted with the duty of examining the students in the special diseases.

The following table gives some idea of the number of beds, patients, and assistants in the special clinics.

The terms of appointment of the professors vary within wide limits. The academic teachers are in receipt of an honorarium, which likewise varies very much in the different institutions and universities, and which, during a variable number of years, increases gradually to a maximum figure. In addition to the yearly salary, a modest sum is ear-marked for house rent, as official residences are not, as a rule, provided.

From the class-fees, etc., paid by the student to the Quæstor of the university the honoraria for the *Docenten* is received, and it is handed to him after certain minor expenses have been deducted. The total naturally varies with the number of students attending each course.

There is in Germany no age-limit such as obtains in Austria,

	Beds.	Patients.	Assistants.	Director.
Berlin:				
Oto-Laryng. Clin.	50	18000	5	Passow.
Laryngo-Rhin. Clin.	25	8000	3	Killian.
Breslau	25	5000	2	Hinsberg.
Freiburg:				
Otolog. Clinic.	26	2000	2	Bloch.
Laryngo-Rhin. Clin.	26	2000	2	Vacant.
Giessen	30 <i>ca.</i>	3700	2	von Eicken.
Greifswald	17	2400	2	lange.
Halle	25	5000	3	Denker.
Heidelberg	56	6000	4	Kümmel.
Jena	34	4100	3	Wittmack.
Königsberg	13	3500	2	Henger.
Munich:				
Otolog. Clin.	19	4000	3	Heine.
Rostock	56	3300	2	Körner.

In addition to the official assistants there are also one or more voluntary assistants. In some of the clinics there are several army medical men, detached for this purpose by the military board, whose term runs for two or three years as a rule.

where the *Docent* is not permitted to lecture after the age of seventy. The amount of pension is determined by the number of years of service, towards which the time spent as an assistant, at all events as a university assistant, is allowed to count. The revenues from lectures and classes, of course, are then no longer included.

There are three classes of patients. Those of the third class cannot be compelled to make any payment for medical services rendered, while those of the first and second classes are paying patients. But it must be noted that beds for the first and second classes are not provided in all the university clinics for throat and ear diseases. For example, there are none in Berlin, Halle, Jena, Königsberg, etc., and private patients have to be sent to private institutions.

With regard to assistants there is no fixed rule. In many of the institutions the assistants are entitled to a lecture room (*freie Station*); in others this is not the case. The official salary varies very much everywhere. In most cases private practice is forbidden. But the possibility is open to them of becoming *Privat-Dozenten*, to obtain which status a greater scientific work and a test-lecture (*Probe-Vorlesung*) are demanded. The *Venia legendi* (permission to lecture) is determined by the faculty. The title of professor-extraordinary is not obtainable, as a rule, until six years after attaining the status of *Privat-Docent*, and then only after evidence has been given of the necessary amount of scientific work. The

nomination as *Privat Dozent* or as professor-extraordinary does not bring with it any increase in salary.

The real chances for the academic teacher consist in calls to other universities. When a vacancy occurs the faculty gives notice that the chair is open. The names of those deemed eligible for the post are submitted to the State Government, which has the power of acceptance or rejection.

With regard to the assumption by medical practitioners of the title of "specialists" for diseases of the throat, nose, and ear, there are no regulations, and in like manner no special qualifications are demanded for the admission of members to the existing scientific societies. The proposal for membership, signed by two members, is laid before the governing body of the society, and as a rule no objection on the part of the society is raised and admission follows.

(D. M., trans.)

PROCEEDINGS OF THE ROYAL SOCIETY OF MEDICINE—LARYNGOLOGICAL SECTION.

December 1, 1911.

DR. STCLAIR THOMSON, *President of the Section, in the Chair.*

Pedunculated Intrinsic Growth of Larynx in a Man, aged forty-one.—J. Everidge.—This case was shown at the last meeting.¹ The growth was removed by the indirect method, and a section shown under the microscope proved to be a granuloma.

Three Cases of Syphilis of Special Interest, two of the Soft Palate and one of the Tongue.—W. Jobson Horne, M.D.—*Case 1*: A man, aged forty-three, twenty-five years ago contracted syphilis. In July, 1911, he attended at the hospital on account of deafness. The posterior pillars of the fauces presented symmetrical perforations, healed and quiescent. The special interest of the case was that several cases of perforation of the soft palate and of the pillars of the fauces had been brought, from time to time, before the Section, and had given rise to a difference of opinion as to whether the condition was specific, congenital, or left by scarlet fever. Further points of interest in this case were the absolute symmetry of the perforations: their occurrence in the posterior pillars, the anterior pillars not being affected; and lastly, a definite history of syphilis. *Case 2*: A woman with ulceration, threatening perforation of the anterior pillars of the fauces. The interest in this case was the comparison with the previous one, and in it presenting the appearances of the early and destructive stage. The patient, however, had so rapidly responded to treatment that perforation had been averted, and the clinical

¹ See JOURN. OF LARYNGOL., RHINOL., AND OTOL., January, 1912, p. 45.

appearances had almost entirely disappeared. *Case 3:* A woman, aged thirty, who attended the hospital in November on account of a swelling each side of the throat. On the right side of the posterior part of the tongue there presented a breaking-down gumma with heaped-up edges of a crater-like appearance. This case also had rapidly responded to treatment.

The PRESIDENT said the curious point was the perforation in the posterior pillars: it was the first time he had seen this. There had been a difference of opinion as to whether the condition was specific, congenital, or left by scarlet fever.

Dr. WATSON-WILLIAMS reminded members that some years ago he described and illustrated a case in the *Lancet*¹ with symmetrical perforations of the anterior pillars, and the absence of any appearance of cicatrices seemed to leave little doubt that the condition in that case was congenital. Probably scarlet fever or other ulcerative affections of the fauces produced a similar condition.

Case of Fixation of Left Vocal Cord and Tracheal Tugging.—**William Hill, M.D.**—The patient was an old man with aneurysm of the aortic arch, and was exhibited to the Section, together with a skiagram showing the condition.

Dr. DAN MCKENZIE asked if Dr. Hill had had experience with the direct examination in cases of aneurysm, and if so, whether he regarded the proceeding as a dangerous one.

Dr. PERMEWAN expressed his pleasure at a case being brought of left cord paralysis, where the aneurysm could be seen. Years ago he raised a storm of discussion in the old Laryngological Society by saying that nearly all the cases of left cord paralysis in which no definite cause could be ascertained were due to aneurysm, even though it could not be felt or seen. He had seen at least three cases in which aneurysm was not physically diagnosed, but the patient died suddenly under conditions suggesting aneurysm. At the meeting he referred to his view had been supported by Professor Chiari; and further experience had only still more convinced him of the truth of it. He was familiar with toxic paralysees, and those due to central nervous disease; but those classes did not come under his statement.

The PRESIDENT regarded Dr. Permewan's statement as rather sweeping. Statistics collected by Avellis showed that 44 per cent. of cases of left recurrent paralysis were never diagnosed, and they went on for many years. But since X rays had been used not so many cases of aneurysm were missed as formerly.

Dr. WATSON-WILLIAMS agreed with Dr. Permewan's remarks. Before the days of X rays, when left-sided abductor paralysis was found for which no adequate cause could be detected, and the patient was of the age when aneurysm occurred, he frequently diagnosed aneurysm solely from the existence of the paralysis or paresis of the left vocal cord, and that diagnosis had been confirmed by the subsequent increase of the aneurysm and the death of the patient.

Dr. R. H. WOODS had always found that where left recurrent paralysis was due to aneurysm there was tracheal tugging. He agreed with Dr. Permewan as to the frequency with which left recurrent paralysis was caused by aneurysm where there was no cause apparent.

Dr. FITZGERALD POWELL remarked that in this case tracheal tugging was very marked, and could be seen as well as felt, but he could not

¹ *Lancet*, 1908, i, p. 229.

agree that tracheal tugging was present in every case of recurrent paralysis depending on aneurysm. As was apparent, this aneurysm was a very large one, but in a number of small aneurysms that he had seen tugging could not be felt.

Dr. DUNDAS GRANT said tracheal tugging was a convenient way of checking one's views in cases of recurrent nerve paralysis. He agreed with Dr. Powell in doubting whether one could by tracheal tugging detect an aneurysm so small as to escape physical examination. He would like to know if members had seen cases of recurrent paralysis of the left cord get well. He had seen this occur.

The PRESIDENT said he showed before the old Society a case in a boy, aged seventeen, under his care for three or four years at Golden Square Hospital, but nobody could diagnose the cause. He had seen such cases recover, but only after operation, when the cause was a goitre. He would still doubt whether the majority of cases of left recurrent nerve paralysis were due to aneurysm; he would not like to say that 50 per cent. were due to aneurysm. Only careful statistics of some hundred or two hundred consecutive cases could settle this point.

Mr. HERBERT TILLEY could remember some cases which would not come into Dr. Pernewan's category. One patient, whom he saw four years ago, had had two children in the interval. She had left vocal cord paralysis, which had persisted, to his knowledge, for four years. No one had been able to find any signs of aneurysm either by X rays or by ordinary examination of the chest. Another case was in an adult, aged fifty-two, who had been X-rayed without detecting any lesion. He had also seen one case come on in the course of acute rheumatic fever, with arytenoid swelling and joint pains. The rheumatism cleared up but the movement of the cord was not restored. He agreed with Dr. Pernewan it was a good principle to regard a left cord paralysis as serious, yet one should not be too ready to come to the conclusion that aneurysm was the cause.

Dr. FITZGERALD POWELL reminded the members that he had shown at a former meeting a case of complete recurrent paralysis in which no cause could be found to account for its presence; it was in a young man, and aneurysm was excluded by all the methods of examination. The paralysis existed for some months, was under treatment without effect, but got well of itself after treatment had been stopped. In twelve months' time after straining the voice it suddenly returned. When the case was shown to the Society it was thought to be due to influenza. Possibly some of the cases mentioned by Mr. Tilley were due to this cause. However, he agreed with Dr. Pernewan that in undiagnosed cases of recurrent paralysis the majority were due to aneurysmal pressure.

Dr. HILL, in reply, said that, in showing the case, he had in view Dr. Pernewan's pronouncement made before the Laryngological Society many years ago. Since then he had seen many cases of left recurrent paralysis with fixed cord, but very few cases were associated with aneurysm. He thought the President had more correctly summarised the significance of left cord paralysis. When it was not due to obvious lesions in the neck or gullet there was a presumption of aneurysm. In answer to Dr. McKenzie, he would not advocate the passage of an oesophagoscope in a case of known aneurysm, though he had, by means of the instrument, on one occasion found an unsuspected aneurysmal dilatation of the lower thoracic aorta where he had expected to find an endoesophageal stricture.

Foreign Bodies removed with the Aid of Upper Bronchoscopy in an Infant Thirteen Months Old.—William Hill, M.D.

The child was sent to hospital with a history of an attack of dyspnoea six days previously when eating a piece of chestnut, and there had been cough and bad entry into the left lung ever since, with bronchorrhoea and fever. A small bronchoscopic tube was passed, under chloroform, by the oral route, and a small white body was seen projecting from the first hyparterial secondary bronchus into the main left bronchus. On account of the small calibre of the tube difficulties were experienced in manipulating forceps and a small enough hook was not at hand. A Brünings' suction tube was then passed down to the foreign body and the tube was connected with a Senorans exhausting bottle; on suction being made and the tube withdrawn the larger of the two pieces of chestnut was found adhering to the end of the tube; a second portion was seen in the endoscope, but before it could be seized it was drawn into the right bronchus: following it up with the endoscope, cough was induced, and the piece of chestnut was ejected. An intubation tube had to be inserted twelve hours later on account of subglottic oedema, and could not be dispensed with altogether until the tenth day. The child left hospital at the end of a fortnight quite well.

This is probably the youngest recorded case of removal of a foreign body *per vias naturales* by bronchoscopic aids. Killian¹ has recently published records of nineteen collected cases of foreign bodies removed by upper bronchoscopy, whose ages varied from fourteen months to seven years, and subsequent tracheotomy was performed in twelve cases, and intubation in the remaining seven cases. The inference is that in young children it is always wise to insert an intubation apparatus immediately on withdrawal of the endoscope when upper bronchoscopy is resorted to. Tracheotomic bronchoscopy brings one nearer one's work, but is less artistic, as involving a cutting operation which obscures the field of investigation by hæmorrhage.

Dr. BROWN KELLY congratulated Dr. Hill on the result, which seemed to establish a record for age. Anyone who had used Brünings' smallest tubes in infants could picture to himself the difficulties surmounted. He was surprised that in all the cases collected by Killian, as well as in Dr. Hill's patient, either intubation or tracheotomy had been required afterwards. He had removed a foreign body by bronchoscopy in a boy, aged three, and in another aged seven, but in neither of these cases did dyspnoea supervene. For diagnostic purposes he had used the tubes in several infants about six months old, and in only one case—and in that the cause was doubtful—was there difficulty afterwards.

Mr. HOWARTH said that in spite of the successful result obtained he was by no means convinced that upper bronchoscopy was the best method to employ in such cases. There were several dangers. The first was that the pressure of the tube on the delicate larynx of a child might cause subglottic swelling; the urgent symptoms of this might be relieved by an intubation tube, but this acted as an irritant body, and increased the danger of subglottic stenosis. The second danger was that during extraction a piece of the foreign body, if it was a friable one, might break off and might be aspirated into the bronchus on the healthy side. It would be necessary to introduce the tube rapidly, and this could best be done if the lower method had originally been employed. Moreover, it was impossible to pass a larger tube through the tracheotomy wound,

¹ *Deutsch. med. Wochenschr.*, Leipz., 1911, xxxvii, p. 1204.

as the larynx of a child of this age would not take more than a 7 mm. tube with safety. He could not agree with Dr. Hill's suggestion that intubation should be employed as a routine measure after the use of the upper method.

Mr. MARK HOVELL said the case was different in adults. Some time ago he was called to see a professional singer, a lady, who, whilst eating a walnut, laughed and drew a segment into the trachea. He could see it move at the upper part of the right bronchus, and was urged to open the trachea and remove it. But he declined to operate, and watched the case, as there was enough airway by the side of the piece of walnut, and the lung did not suffer. After two or three days the piece of walnut softened and was coughed up. The only treatment employed was keeping the patient in the horizontal position.

Dr. HILL, in reply, said he did not suggest that in every case intubation was necessary after bronchoscopy, though it was doubtless a wise precaution. If the intubation tube were of the right size he did not think it would do the child much harm if worn for a few days. He used a bronchoscopic tube, 9 mm. in diameter, in this case, and another occasion he would perhaps use a smaller tube in so young a child. He considered Killian's bronchoscopic tubes were better than Brünings', because space was lost by the extension tube and made instrumentation more difficult. For children especially he had reverted to the old Killian tube. He admitted there was much to be said for doing the lower operation, in view of the fact that Killian had collected records of so many cases in infants where tracheotomy or intubation had been subsequently called for. He had shown the case mainly to illustrate the result of suction where, as in an infant, the manipulations of forceps and hooks were difficult on account of the necessarily small calibre of the bronchoscope employed.

Two Cases of Carcinoma of the Deep Pharynx.—William Hill, M.D.—*Case 1:* Carcinoma involving the posterior wall and left pyriform fossa of the deep (post-crioidal) pharynx in a woman aged forty-one. ? Operable. *Case 2:* Carcinoma involving the whole depth and circumference of the deep pharynx, including the pharyngeal aspect of the arytenoids, in a man, aged fifty-six; the glands in the neck are extensively involved. The case is hopelessly inoperable, and is shown previous to being referred to the Radium Institute for palliative treatment.

Mr. BETHAM ROBINSON was positively of the opinion that nothing at all should be done in Case 1. There were glands on both sides, attached to the posterior margins of the thyroid body, and to get the growth away one would have to remove the thyroid as well as the other structures.

Tuberculosis Disease of Larynx in a Man, aged thirty-seven.—W. H. Kelson, M.D.—This patient was shown in March, 1910, when he had in addition signs of phthisis at both apices. He went to a sanatorium, and the physical signs of phthisis have now disappeared from his lungs; he has increased considerable in weight, and his temperature keeps down. His epiglottis, however, is about the same, and there is also a small ulcer at the base of the right arytenoid. He has had no treatment for his larynx since entering the sanatorium. The case is shown to illustrate the fact that in tuberculous disease the larynx does not always heal *pari passu* with the lung.

Dr. JOHNSON HORNE asked whether Dr. Kelson was satisfied that the

laryngeal lesion was entirely due to tubercle. The fact of the man having phthisis would naturally suggest it might be tuberculous, but such a clinical appearance might be partly due to syphilis.

Mr. HORSFORD asked why the larynx had not been treated surgically, so as to remove the focus of disease.

The PRESIDENT said it was recognised that there was no necessary parallelism between the disease of the larynx and that of the lung. Many lungs improved while the larynx went to the bad. But there were larynges which could be healed while the patient was dying. It was against treating those cases that he had sometimes protested. When a patient would die in a year or two, unless there was dysphagia or stridor he would only treat the larynx symptomatically. This present case had lasted since March, 1910, and the larynx was not worse, so it illustrated the value of sanatorium treatment. In the old days tuberculous infiltration of the epiglottis would not have gone on for eighteen months and left the larynx as quiescent as this one was. It was an indolent form of tubercle, and might well be called lupoid.

Dr. KELSON, in reply, said he showed the case because some people had the idea that if a patient was sent to a sanatorium that was all which was needed. At the sanatorium he was treated for the lung condition, which got well, but the larynx was not treated and did not get well and a fresh ulcer had appeared at the base of the arytenoid. The patient said he now felt much better, and his lungs were reported to be sound. He proposed to treat the larynx.

Case of Abductor Paresis with Tuberculous Disease of both Apices.—W. H. Kelson, M.D.—Patient, a man, aged forty-four, is suffering from chronic phthisis and gets attacks of inspiratory dyspnoea, outward movement of the cords being markedly feeble.

Dr. DUNDAS GRANT remarked that the stridor was markedly expiratory, which, with pure abductor paralysis or paresis, was unusual. It pointed to something subglottic or tracheal, but in this case he thought it was a pure neurosis, and that it would probably disappear under an anæsthetic.

Mr. TILLEY said he could not satisfy himself as to the presence of abductor paresis: he held the patient's tongue gently, but the cords seemed to be abducting in the normal fashion.

Dr. W. HILL said that these cases often varied as regards the amount of movement from day to day. He showed two cases at the last meeting which had, when examined at the hospital, anæsthesia with marked paresis, but there was at the meeting very little. In those two cases he had argued that variability supported the idea of the presence of functional trouble.

Dr. WATSON-WILLIAMS said his impression was that the left vocal cord in this patient was markedly paretic. In order to get over the question of a mere temporary absence of abduction which a nervous patient sometimes showed, he asked the patient to sing a prolonged note and then take a deep breath. This left him in no doubt that there was abductor paresis, particularly on the left side.

Dr. DAN MCKENZIE believed there was abductor paresis in both cords. When he examined the case he saw the cords swing out to their full extent at the beginning of inspiration, but after a short period they approximated and remained close together. This might either be due to paresis of the abductors or to spasm of the adductors.

The PRESIDENT said he used to think he had cases of abductor paresis,

and exhibited one or two, but as he learnt by experience he ceased to find such cases. He believed it was rather adductor spasm in this case. Double abductor paralysis was one of the rarest things which occurred in neurosis of the larynx, whereas adductor spasm was very common. In 150 cases of laryngeal paralysis, Avellis had found it to be bilateral in only 12. He had a case in which it was impossible to settle the question without chloroform. That patient was a morphomaniac. People who had been to a sanatorium, and got their tubercle arrested, became introspective, and were apt to suffer from functional aphonia and adductor spasm.

Dr. KELSON, in reply, said he had never seen the patient abduct his cords properly. They moved, but the glottis was never widely open. The case was sent to him by a physician who was treating the patient for his lungs, and as the patient made a noise in breathing he wanted to know if there was anything in the larynx which accounted for it. The case varied a good deal, and he wondered whether it was one of the rare cases recorded by Schrötter and others in which the recurrent laryngeal was caught by the thickened pleura. The phthisis was chronic and apical.

Prolonged Laryngeal Stenosis from some Obscure Inflammatory cause (? Pneumococcus Infection).—Dan McKenzie, M.D.

—A woman, aged fifty-seven: first seen January, 1911, on account of dysphagia, and some dyspnoea of gradual onset and of two or three months' duration. Examination showed a tumour on the left side of the pharynx with its main mass below the level of the tongue, and preventing a view of the larynx. The glands at angle of jaw were enlarged and hard, and some œdema of the faucial pillows on the left side and of the neck around the glands was noted. Provisional diagnosis of sarcoma. Two days later admitted to hospital for observation. Sudden onset of urgent dyspnoea necessitated hasty tracheotomy under local anaesthesia, an operation difficult on account of œdema which had spread all round the neck.

The patient, being unable to swallow, a small œsophageal tube was inserted. Acute pneumococcal bronchitis followed the operation and lasted a week, during which the œdema and swelling of the neck and pharynx subsided, and a view of the larynx was obtained. There was general cedematous laryngitis, and the left cord was fixed. Three weeks later the laryngeal tumefaction also disappeared, although the cord remained immobile, and the tracheotomy tube was removed. A fortnight later, however, subglottic swelling made its appearance, and the tube had to be reinserted. The laryngeal stenosis now became absolute, and continued so for several weeks. On the advice of Dr. Dundas Grant a low tracheotomy was performed.

During the last three months the larynx has gradually improved. Two granulomatous masses, one in the anterior commissure, and the other also in front but below the cords, have been removed by the direct method. The cords move equally, and the patient can breathe *per vias naturales*, and is able to phonate. The tracheotomy tube is still *in situ*, and will be left until it is seen that the granulomata will not recur.

Dr. BROWN KELLY said the sequence of events noted in the early part of the report—tumour in the pharynx, enlarged glands at angle of jaw, diagnosis of sarcoma, subsequent clearing up of whole condition—reminded him of a case he saw some time ago of an old lady who was considered to have malignant disease of the tonsil. On examination he

found a growth the size of a hen's egg with an ulcerated surface, and from the appearances, etc., he had no hesitation in corroborating the diagnosis that had been made. Having told the relatives of the hopeless outlook, he was surprised to learn later that immediately after his visit the growth had begun to slough, and in three weeks it had quite disappeared and the parts had healed. Somewhat similar cases had been reported by Sir Felix Semon, Broeckaert, and others; and recently Gleitsmann had written on the subject. There were also cases on record in which supposed malignant diseases had cleared up after the administration of arsenic. All these cases, as well as Dr. McKenzie's, might belong to the same category.

Dr. PERMEWAN said that three weeks ago a surgical colleague asked him to see a case which had been admitted for cancer at the back of the tongue, with a large mass of glands. The surgeon opened the glands, and felt no doubt about the diagnosis. But as there was a point of suppuration in the glands, he asked him (Dr. Permewan) to see the case. Three weeks afterwards nothing could be seen of the swelling, so that clearly it was not a case of malignant disease.

Laryngeal Case for Diagnosis.—**Dan McKenzie, M.D.**—The patient is a man, aged forty three. First seen on April 24, 1911, complaining of slight huskiness of voice. The cords showed some redness on both vocal processes, but the redness was most marked on the left, and here a whitish warty-like growth appeared six months later, with some infiltration round it. This growth was removed on September 30 by the direct method, and Dr. Wyatt Wingrave reported it to be "a simple squamous papilloma," with a "very scanty connective-tissue core," and no evidence of malignancy. Since the removal of the growth the cord remains as before. The vocal process is still red and infiltrated, and the ulcer left by the operation has not healed. The diagnosis of malignancy seems to be excluded by the pathological examination. There is no sign of tuberculosis, if we accept an occasional rhonchus at the left pulmonary apex behind. The sputum has been examined by Dr. Wingrave, who reports that there are no tubercle bacilli present. If the lesion is purely inflammatory, suggestions as to treatment would be welcomed.

Mr. HERBERT TILLEY thought that the amount of congestion was what one saw after removal of a benign laryngeal growth. It might remain in the cord a long time after the operation. He would treat it with strong nitrate of silver.

Mr. HORSFORD remembered treating a case of unilateral laryngitis, which cleared up eventually under tertiary syphilitic treatment. He would carry out the same treatment here.

Dr. FITZGERALD POWELL agreed with Mr. Tilley that it was probably a chronic inflammatory condition, the result of traumatism, and that nitrate of silver, or chloride of zinc in solution, would probably clear it up.

Dr. BROWN KELLY regarded it as a case of pachydermia. The pathologist's report—"a simple squamous papilloma"—supported this view. Chiari had proposed that the term "papilloma laryngis" should be applied to the condition described as pachydermia verrucosa. Treatment was not of much use in pachydermia.

The PRESIDENT agreed with Dr. Brown Kelly. There was some infiltration in the opposite vocal process. The redness about the whitish warty growth did not necessarily suggest malignancy. He had followed up a number of cases of pachydermia, and had seen the condition sub-

side and return. One case, suggestive of malignant disease, had even the movement of the vocal cord slightly impaired. This patient passed for a while into other hands, and a tracheotomy was done preliminary to excising the larynx; fortunately this was not carried out. That was four years ago, and the patient was now well in regard to the larynx, but still had the pachydermia. Recently he asked Sir Felix Semon to see a case the description of which answered exactly to this one; it was left alone and cleared up. The less done to such cases the better; he would not even paint with nitrate of silver, but would stop tobacco and procure as much rest to the voice as possible.

Large Suppurating Bony-walled Cyst of Right Middle Turbinal, associated with Chronic Empyema of corresponding Antrum.—Herbert Tilley, F.R.C.S.—Female, aged sixty-three, had complained "for years" of increasing difficulty of breathing through the right nostril, from which there was frequently a discharge of mucus, "sometimes tinged with matter." Examination, November 11, 1911: The right nasal cavity was quite obstructed by a firm, pale swelling, which could be only slightly indented with a probe. The right antrum was dark on transillumination. Operation, November 12: The canine fossa and ascending process of superior maxilla were exposed; the former was opened and the latter removed, as in Denker's operation. The inner antral wall was pushed outwards to such an extent that the sinus was reduced to a crescent-shaped cavity. It was full of pus. When the thinned inner antral wall was removed the cyst was fully exposed and removed. Recovery rapid and uneventful.

Dr. Woods said that some years ago he had a similar case. Cysts of the middle turbinal of small size were common enough, but in the case he referred to both sides were affected, and the bones were ballooned so as to grow out through the nostrils, completely stopping the nose. After being snared it had to be broken up so as to get it out of the nostril.

Dr. W. HILL did not think the term "cyst" was appropriate. They were air-cells of the middle turbinal, which became blocked and then suppurated. He would call it a retention sinusitis.

Patient cured of External Suppurating Frontal Sinus Fistula by Intra-nasal Operation.—Herbert Tilley, F.R.C.S.—Mr. T—, aged seventy-one, consulted me in February, 1910, for a discharge beneath the inner end of the left eyebrow which had been present for twelve months. Examination (February 3, 1911) showed a suppurating fistula opening about $\frac{1}{4}$ in. above the internal canthus, through which a probe could be passed inwards and upwards towards the floor of the left frontal sinus. This probe could be touched by another passed into the frontal sinus by way of the nose. The left antrum was dark on transillumination, and exploration proved it to be full of foetid pus. On February 2 the radical canine fossa operation was performed on the left antrum, and it was intended to open the frontal sinus at the same time, but the patient was so unwell under the anæsthetic that I thought it wiser only to remove the middle turbinal and those anterior ethmoidal cells in the immediate neighbourhood of the fronto-nasal canal. It was then quite easy to pass a probe into the frontal sinus, and during subsequent days this cavity was daily irrigated with warm, weak antiseptic lotions. The fistula gradually healed, is now firmly closed, and there has been no discharge from it for at least six months, and the other sinuses are quite free from

inflammation. It is sometimes stated that an external fistula is one of the indications for a radical external operation, but the above case shows that such a rule may have exceptions.

The PRESIDENT said he had had some cases which opened spontaneously, and some which had been opened by ophthalmic surgeons in the inner canthus. They looked as though they might come from the frontal sinus, but in one or two instances they originated in a fronto-ethmoidal cell. Several cases occurred after influenza four or five years ago. Those fistulae would cease when the inside of the nose was attended to.

A Case of Unilateral Paralysis affecting the Face, Pharynx, Larynx, and Tongue, acute in onset.—George Wilkinson, F.R.C.S. —The patient is a married woman, aged about thirty-two. Her medical man has furnished the following particulars: "I first saw her for an attack, febrile in character, attended by vomiting, in September, 1910. The highest temperature was 102° F. I thought it was due either to influenza or 'spotted fever,' which at that time was very prevalent here. (There were also several cases, about eighteen or nineteen, of infantile paralysis in the neighbourhood at the time.) The vomiting stopped after about twenty-four hours, but the fever remained for four or five days. After the first day some paralysis of the right side of the face was noticed. After about ten days my attention was called to paralysis of the palate by regurgitation of fluid through the nose on swallowing. There was never at any time any paralysis of the limbs or inco-ordination. I have nearly lost her on several occasions from attacks of bronchitis. She had never had bronchitis before. The seriousness of the bronchitis was much increased owing to the ineffectual character of the cough, and by the tendency to severe spasm of the larynx. No Klebs-Loeffler bacilli were present." In December, 1910, she saw a physician at Leicester, who diagnosed the case as one of acute poli-encephalitis. Condition on August 8, 1911: The patient complains of fluids regurgitating through the nose, and of difficulty in avoiding "choking" during swallowing. The articulation is not markedly affected, though the gutturals are imperfectly pronounced owing to imperfect closure of the naso-pharynx. The voice is strong and natural. It has never been lost. The paralysis of the face has almost disappeared. There is slight contracture of the muscles at the right angle of the mouth. Paralysis of the muscles of the soft palate is almost complete, and limited to the right side, and there is a considerable degree of anaesthesia in these regions. No definite wasting of the muscles. The right half of the tongue is slightly wasted. It appears slightly broader than the left half, but not so thick. The tongue is protruded towards the right. On examination by the laryngoscope there was seen to be incomplete abductor paralysis of the right cord. No examination of the sensibility of the larynx was made on account of the patient's dread of "spasms of the throat" being induced. There is now no anaesthesia of the face, or paralysis of the pterygoids. There is no motor or sensory paralysis, and no disturbance of the reflexes in the limbs. The patient has great difficulty in taking sufficient food to maintain proper nutrition, owing to the regurgitation and the frequent attacks of choking. She has one meal each day through the stomach-tube.

MR. WILKINSON, in reply to remarks, said that the lesions were those of acute poliomyelitis situated in the bulb. The most unusual feature of the present case was the sharp limitation of the lesions to one side,

and to a group of muscles the nuclei of which were all close together, without any involvement of the trunk or limbs.

Notes of three Cases illustrating Infection of the Accessory Sinuses by Entry of Water into the Nose during Bathing; and of a Fourth Case having possibly the same Origin.—**George Wilkinson, F.R.C.S.**—*Case 1: Frontal sinus suppuration.*—A man, aged nineteen, who was operated on successfully for right frontal sinus suppuration in November, 1905, attributed his nasal trouble to a "cold after bathing." When at school he was in the habit of bathing with other boys in a canal. On one occasion, two years previously, he got "a noseful of water" after diving in. Next day he had rather a severe headache and a severe chill in the head. Profuse purulent discharge followed. Since that time he had suffered from a stuffiness of the right nostril, offensive discharge, frontal headache, dizziness on stooping, and sleepiness. *Case 2: Left antral suppuration.*—A married lady, aged about thirty-two. She was found to have a fœtid empyema of the left antrum. This was cured by a Caldwell-Luc operation. She likewise referred the starting-point of the nasal trouble to a "cold caught at the swimming baths" six months previously. She said that on the last occasion when she visited the baths she had a fainting attack and sank to the bottom. She was quickly hauled out. The next day she had violent neuralgia in the face and frontal headache, and was confined to bed for several days. On subsidence of the pain she was left with a severe "cold in the head," with purulent, offensive discharge from the nose, which mostly found its way into the back of the throat. The discharge had continued ever since, and she had suffered from severe frontal headaches. *Case 3: Ethmoiditis with polypi; secondary infection after bathing; acute septic ethmoiditis and frontal sinusitis; osteomyelitis of the frontal bones; subdural abscesses, and ? abscess in the left frontal lobe; death.*—A youth, aged seventeen, was seen at the Sheffield Royal Hospital on August 16, 1910. Pus, polypi and swelling of the middle turbinal were found in the right nostril. He was entered for admission to the hospital for curetting of the ethmoid. He was sent on October 2 by his medical attendant as suffering from "orbital abscess." On the day of his return home from his holiday he began to be ill, with headache and "cold in the head." On the day previous he had bathed in the sea. He rapidly became worse, with severe pain and tenderness over the forehead, and fever. The right eye and forehead swelled. A diagnosis of acute septic frontal sinusitis and osteomyelitis of the frontal bone was made. Both frontal sinuses were opened and were found to contain a quantity of pus. At a subsequent operation large subdural abscesses on both sides were opened. Eventually he died with symptoms of left-sided frontal lobe abscess. *Case 4: Acute frontal sinus suppuration and osteomyelitis of the frontal bones; death from pyæmia of the lungs.*—On May 24, 1911, I saw a boy, aged fifteen, supposed to be suffering from orbital abscess. His right eye was completely closed by swelling of the lids, which extended over the forehead up to the vertex, and across the root of the nose to the opposite eyelids. Temperature, 104° F.; pulse, 120. He was delirious; no coherent answers could be got from him, except that he had had headache and pain in the chest. The right middle turbinal was swollen, and there was pus in the right nostril. Respirations 40. The parents informed me that the pain began in the forehead on May 18. They knew of no cause for the illness. There had been no injury and no previous

complaint of any nasal trouble. I elicited, on inquiry, that he had been to the swimming baths on the evening of May 17. A rapid operation was done on the frontal sinuses, the anterior walls being freely removed. They were full of pus. Free drainage was provided. No relief resulted from the operation, the patient rapidly becoming deeply comatose and dying next day.

Dr. WATSON-WILLIAMS said that at one time he had charge of a public school, and noticed that especially during the summer months there was a tendency to acute otitis media, which was due to infection from the school baths. The ear was more susceptible to infection from bathing than the nose.

Dr. DAN MCKENZIE said that Dr. Wyatt Wingrave took great interest in the question of the infection of the ear by sea-bathing; one summer he took samples of sea-water from several health resorts on the English sea-coast, and found the *Bacillus coli communis* in every one.

Mr. WILKINSON, in reply, said the school authorities in his district compelled the children to go to swimming baths, and he had pointed out to them the danger of sending children there who had discharges from the ears. It was a point of some practical importance as to whether children with nasal discharges should not also be prohibited from bathing.

Papilloma Growing from the Inferior Turbinate.—E. W. Bain, F.R.C.S.—Mrs. L—, aged fifty-six, first seen in January, 1911, complaining of left-sided nasal obstruction and epistaxis. On examination, the left side of the nose was found to be occupied by a soft papillomatous growth, attached by a broad base to the inferior turbinate. The growth was removed, but recurred in three months. It was again removed, and when the patient was seen recently had once more returned. A section of the growth was taken for microscopical examination, and the pathologist reported it to be a proliferating papilloma. A microscopical section of the tumour and a large portion of the growth were exhibited.

The PRESIDENT said there were in literature only fourteen authenticated cases of papilloma of the nose. He recalled the case shown by Dr. Logan Turner, and described in the *Archives of Otolaryngology*.¹ These tumours grew from the septum or from the inferior turbinate, and were apt to simulate a sarcoma.

Dr. W. HILL said he had one such case in private, and about the same time he had one under him at St. Mary's Hospital, which bled a great deal. It was a true wart, and after its removal the base still bled. It came from the favourite spot for septal hæmorrhage. He did not think such cases were as uncommon as had been suggested by the President's statistics. When small they would probably be regarded as too trivial to be worth recording. Those of large size, such as Mr. Bain's specimen, were probably infrequent.

Mr. BETHAM ROBINSON corroborated Dr. Hill's remarks. Many years ago he first removed a small one from the tip of the inferior turbinate, and did not think it worth while to record it. The reason more were not published was probably that only the large ones had been thought worthy of record.

Dr. PEGLER said it was remarkable that of the fourteen recorded cases of squamous papilloma of the nasal cavities alluded to by the President, six were represented by microscopical sections in the collection of the Society. Speaking from memory, he would say the present one

¹ *Arch. of Otol.*, New York, 1897, xxvi, pp. 141-146.

resembled Dr. Logan Turner's, which was a large cauliflower-like papilloma. These growths were rare, but they were closely simulated by another class of neoplasm equally innocent clinically, but mainly distinguished by the character of the epithelium, which was of the palisade form and ciliated. In a recent case of this nature, upon which the speaker had operated, these growths were studded over and firmly fixed to the floor of the inferior meatus, and some were also attached to the neighbouring parts of the inferior turbinal and septum. They could scarcely be described as ordinary papilliform mucous hypertrophies. At a future date he hoped to show the patient and sections.

Dr. JOHNSON HORNE did not think such cases of innocent bleeding intra-nasal tumours were as rare as was thought. To save useless discussion they should be put under a general class of "bleeding polypus," using the term in a comprehensive and non-committal sense.

Mr. WILKINSON had a specimen very much like it. It was a pedunculated tumour the size of a large chestnut, growing from the back of the inferior turbinal into the naso-pharynx and blocking up the nose. In this case the opposite inferior turbinal was covered with ordinary papilliform hypertrophy.

Mr. HERBERT TILLEY thought the best treatment would be to remove the anterior half of the turbinal from which the tumour grew. If that did not effect a cure one could perform a more extensive operation. Most members must have seen somewhat similar cases, and he had a picture of a small papilloma of the inferior turbinal amongst his collection.

Pharyngeal Tuberculosis; Tuberculous Lesions of other Parts; Treatment by Injections of Tuberculin.—T. Jefferson Faulder, F.R.C.S., and W. D. Harmer, F.R.C.S.—G. M. T.—, female, aged twenty-four. History: Tuberculous dactylitis from childhood; finger amputated. Eleven years ago disease of right elbow, now quiescent. About seven years ago disease of right breast, possibly still active. About eight years ago began to suffer from sore throat and repeated "abscesses" in the throat; was an inmate of a chest hospital for seventeen weeks, at that time without any improvement. The disease of the throat began in the tonsils and spread to adjacent parts of the pharynx. It consisted of callous ulceration, granulomatous formations, and thick membranes. It appears to have been arrested during the administration of tuberculin. Treatment by injections of tuberculin began on February 9, 1911, with a dose of T.R. $\frac{1}{10000}$ mg. This has been increased gradually and continued weekly up to the present time, the last dose being $\frac{1}{5000}$ mg. The tuberculous sinus present in the right breast healed after four injections. There have been no ill-effects from the injections except malaise on one occasion, when a dose of T.R. $\frac{1}{10000}$ mg. was given. As a rule, the patient states that after the injections she feels very much better than usual. There is marked improvement in the throat.

Dr. WOODS said he had never seen quite this clinical picture; it did not look like lupus of the pharynx. It presented an appearance akin to leucoplakia. He asked why it was regarded as lupus.

Dr. JOHNSON HORNE said if it were a tuberculous lesion in the pharynx it was remarkable that the larynx had escaped invasion. In the cases of tuberculosis of the pharynx which he had seen the larynx had always been involved, and the lungs also. He would be glad to hear the experience of others as to the relative frequency of the escape of the larynx when tubercle was found in the pharynx.

Dr. H. J. DAVIS said that last year he had a private case—a man,

aged thirty-nine, who died of tuberculous pharyngitis. The entire soft palate was destroyed, but there were no signs in the larynx at all.

The PRESIDENT said a case such as this was unusual in his experience. When acute miliary tuberculosis attacked the pharynx it did not last long. It was very rare except in advanced cases of tuberculosis. In the present case there was a white milky patch without very marked infiltration of the tissues, and the uvula was thin and drew up instead of being leathery. The patient had nothing in her nose. He agreed that it was rare to find lupus in the pharynx without it attacking the larynx. In many cases when one put in adrenalin and cocaine one could see the scars of old lupus. It was uncommon to have lupus of the pharynx without it being in the nose also. He presumed the woman had reactions after the injections. She evidently had tubercle elsewhere. He did not know what the condition was in this case, but it might be self-induced. He suggested a section should be made from it.

Dr. FITZGERALD POWELL said he thought the case was one of chronic tuberculosis of the pharynx. He had had cases, and the one he had specially in his mind was that of a young woman who consulted him for ulceration of the edge of the soft palate and uvula; she also had some pulmonary tubercle. On curetting repeatedly and the use of lactic acid and iodoform the ulceration completely cleared up and got well; it was a chronic tuberculous ulceration without any of the characters of lupus.

Mr. FAULDER, in reply, said the patient had been under observation from nine to ten years, and had had a great deal of treatment. She had had repeated abscesses in different parts of the throat and a spreading ulceration. The report always was that it was tuberculous. Painting with lactic acid and other local treatment had been tried, and there had always been the formation of a membrane. He had not seen a similar case before, but had seen tuberculous ulceration of the tongue which did not spread to other parts. She was shown to demonstrate the possibility of safely treating out-patients with tuberculin injections, as well as the improvement under such treatment. With regard to the suggestion that it might be artefact, she also had tuberculous dactylitis and tuberculous disease of the elbow, and now had tubercle of the breast. He believed that as the disease began in the tonsils, if these had been removed earlier she might have been saved some of her subsequent trouble. There was reaction only after the larger injections.

Mr. HARMER, in reply, said that four years ago the ulceration was deeper and the disease more active. Following the injections the disease was more superficial, and one could often peel off from the surface a membranous deposit. During the last four years he had seen three other cases like this in appearance. The first was in a boy, aged seven, who had congenital syphilis, and his trouble cleared up under injections of salvarsan. The second was in a very hysterical lady, who had a clear infection of pneumococci. This was thought to be an artefact. The third case was that of a lady, whose bacteriological examinations showed on one occasion pure coliform bacillus, next Hoffman's, and then *catarrhalis* and staphylococcus. It was obvious, therefore, that the bacteriology of such cases was uncertain.

Polypoid Mass growing from an Enlarged Tonsil; ? Cystic Degeneration.—E. A. Peters, M.D.—E. H.—, schoolboy, aged eleven, underwent an operation for adenoids and tonsils at a London hospital seven years ago. At present both tonsils are enlarged, with

evidence of chronic tonsillitis. An irregularly nodular mass 1 in. in diameter projects from the right tonsil below the supra-tonsillar fossa. The constituent tissue is whiter, but otherwise resembles the tonsil. The usual deep cervical glands are slightly enlarged.

The PRESIDENT said there was no need to suggest that the condition was connected with the operation. He had seen the same in tonsils which had not been operated upon. In a case of the kind he snipped off the growth with scissors and sent it to Dr. Wingrave, who reported it as cystic granulation-tissue and ordinary tonsillar tissue.

Dr. DAN McKENZIE thought that if the operation had not been incomplete the recurrence would not have occurred. The surface of the growth seemed to be cystic. This case, like that of Mr. Jefferson Faulder and Mr. W. H. Harmer, supported those who advocated enucleation of the tonsil as the routine operation.

PROCEEDINGS OF THE SCOTTISH OTOLOGICAL AND LARYNGOLOGICAL SOCIETY.

Meeting in the Royal Infirmary, Edinburgh, November 25, 1911.

Dr. J. MALCOLM FARQUHARSON *in the Chair.*

Reported by Dr. W. S. SYME (Glasgow), *Hon. Sec.*

(Continued from p. 116.)

An Analysis of 123 Consecutive Cases in which Operations were Performed for the Relief of the Mastoid, Labyrinthine, and Intra-cranial Complications of Suppurative Middle-ear Disease.¹

—Drs. J. S. Fraser and J. K. Milne Dickie.

Dr. LOGAN TURNER congratulated Dr. Fraser and Dr. Dickie on their paper. It had evidently taken up a great deal of time and entailed a great deal of work. Two or three points arose to which he would like to refer. Dr. Fraser says it is probably unwise to remove the tonsils and adenoids at the same time as the mastoid operation. He (Dr. Logan Turner) thought they were in the habit of doing that, and without bad results. In connection with meningitis Dr. Fraser recorded a case in which, while being syringed, the patient became giddy, and suddenly fell to the diseased side; further symptoms developed, and death followed from meningitis. A double vestibulotomy was performed in that case. Why did Dr. Fraser perform that operation, and why did he open the temporo-sphenoidal lobe? Were not the clinical symptoms suggestive rather of meningitis than abscess? It would be interesting to know the results of operations for mastoid disease after a long interval; cases get well as regards the discharge, but after the lapse of two or three years the discharge began again, and therefore it would be valuable if Dr. Fraser could again see some of his cases with a view to noting whether cure is permanent or not.

Dr. KERR LOVE congratulated Dr. Fraser on the honesty of his production. There were two points he would like to notice. Firstly, he was

¹ See p. 133.

glad to see that Dr. Fraser advocated no regular syringing; and secondly, he would like to understand a little more about the flap used, which he did not always find satisfactory. These were points on which some discussion might take place. He agreed with Dr. Fraser that now and again it was necessary to make a thorough clearing out of those cases by syringing, otherwise such good results are not obtained.

Dr. MILLIGAN said that Dr. Fraser and Dr. Dickie's paper was a monumental piece of work, entailing an enormous amount of trouble, while the lucidity with which it was put together rendered it very valuable. With regard to Bier's treatment he entirely agreed. He had tried it on numerous occasions and found it of no use whatever; he had nothing to say but to condemn it. Referring to the question of chronic purulent discharge from the ear associated with good hearing, etc., the hint thrown out was extremely valuable. In many of the cases the important point is the condition of the Eustachian tube, and not the middle ear at all. They all, of course, endeavoured to keep the nasal passages healthy in order to prevent catarrh of the tubes, but that was not always easy to do. The question, therefore, arose as to whether a definite endeavour should be made to entirely close the tube, and, if so, the best way of doing it? They would all agree that it was an extremely difficult thing to close the Eustachian tube. At a discussion a few days ago in London he had suggested a method, where possible, of retaining a portion of the membrana tympani and folding it over the Eustachian tube. He (Dr. Milligan) had also found that a very excellent plan was to pass a Weber-Lief's cannula from the tympanic end of the tube, and gently and under pressure syringe with a nitrate of silver solution. He had found on several occasions that such a method of treatment had arrested a discharge from the tube, and had left the middle ear perfectly clean and dry. Packing he had long ago given up. At a meeting of the Otological Society many years ago the question was raised, and packing was then condemned. The case, of course, should be dressed once or twice by packing, but after that the treatment should be merely to use drops—a solution of boracic acid or something of that sort. He had for years made a practice of packing as little as possible, leaving the packing in for four or five days, and then taking it out and re-packing for two days, after that dispensing with it altogether. If the flap were properly adjusted there was no necessity for it; it only excited granulation tissue and produced an unhealthy condition. Another contentious point was Dr. Fraser's treatment of the cholesteatoma matrix. This point had been thrashed out many times in the south. He entirely disagreed with Dr. Fraser; he regarded the matrix as a product of the disease, and one which ought to be removed. He believed a cholesteatoma to be a purely metaplastic condition of the middle ear induced by various abnormal factors in the tympanic cavity; he did think it the right thing to leave the matrix. It was, however, a point which required to be discussed, as there were great differences of opinion on the subject. Then he was very sorry Dr. Fraser had not tried his (Dr. Milligan's) flap. He (Dr. Milligan) had seen Professor Körner working out his flap, but he did not like it at all. Tuberculous ear cases were always very interesting, and it made one sad to see the way these cases went wrong in hospital practice. It was very different in private practice, where everything could be done which should be as regards climate, nursing, and so on; under such circumstances one did not get at all bad results. Whatever operation was done in hospital practice on tuberculous infants and children, the cases were prone to go wrong. The whole of Dr.

Fraser's paper teemed with interesting points, and, if he might say so, was a very great credit to the Edinburgh School.

Dr. MALCOLM FARQUHARSON had always been disappointed after leaving the so-called matrix; he made it a rule to curette the bone as deeply as possible. His practice as regards packing was rather intermittent; he used sterilised vaseline with only as much gauze as served to drain the cavity, but he did not pack in the ordinary sense. Certainly the absence of packing would lead to quicker healing if all went well. In some cases he had blamed it for an irregular growth of the granulation-tissue, which led to the formation of recesses which had to be treated afterwards.

Dr. T. BARR agreed that the paper was a most valuable contribution to the subject, indeed a monument of industry. No doubt it had the great disadvantage that in a large number of the cases the ultimate results were not obtained; only in about two thirds were the ultimate results recorded; this was a weak point. With regard to some questions bearing upon the after-treatment of the radical mastoid operation referred to by Dr. Milligan, he was almost ashamed, after Dr. Milligan's remarks, to confess that he still packed in a certain number of cases, although he found that other cases did very well without packing. In a certain number, however, he found that in the absence of packing exuberant granulation-tissue sprouts up apparently from the absence of pressure, adhesions form, and the cavities fill up with unhealthy tissue, leaving purulent foci. By careful packing on strict aseptic principles for a limited time these tendencies are overcome, the contour of the cavities is retained, and epithelialisation promoted. It would be a great saving of time and trouble if one could in every case do without packing, but he confessed that he had not infrequently been compelled, when trying to do without packing, to take to it before getting a satisfactory result. The proportion of cases brought eventually to a perfectly dry condition was an interesting point. Apparently in Dr. Fraser's cases thirty-six in the 100 had remained more or less moist after six months. The causes of the persistence of moisture in these cases were very important. No doubt the condition of the Eustachian tube had, in a number of cases, something to do with it. The source of discharge seemed to be the region of the sinus tympani. In one of his cases the moisture lasted for at least a year after operation, and seemed to be perpetuated by a firm mass of granulation-tissue at the bottom of a very deep hypotympanic space, difficult to see. By means of repeated cauterisation and the use of spirit lotion injected into the cavity with the aid of a cannula directed downwards, he succeeded in bringing about a dry condition. A further difficulty in some of these cases was the tendency to exfoliation of the new epidermis, so that laminated casts of epidermis fill the cavity of the ear, leading to discharge if not regularly removed by the use of peroxide of hydrogen, syringing, and the use of forceps. Why some cases have this tendency and others have not could not be satisfactorily explained.

Dr. SYME, referring to an acute case, said he was glad to hear Dr. Fraser say he had not opened into the antrum. His practice was to abstain from opening the antrum if possible. Also, in only one or two acute cases Dr. Fraser removed the tip. He (Dr. Syme) thought it saved a good deal of trouble if as much of the tip as possible were removed; it allowed the flap to go down upon the healthy bone, and the length of time of the after-treatment was much curtailed. For a long time he had given up packing after the radical operation. There were cases where adhesions formed, and after dividing these, he introduced packing for a

day or two. He would like to have heard the opinions of members as to the indications for opening the labyrinth and the stage at which this should be done.

Dr. ADAM asked whether Dr. Fraser removed the posterior wall in the incomplete radical operation. It was an advantage to do so.

Dr. MACKENZIE BOOTH remarked that he still packed; he would be interested to hear if any of the other members did so besides Dr. Barr; he thought it was often useful; in a good many cases better results were obtained by packing than by any other means. He was much interested in Dr. Milligan's successful treatment of the Eustachian tubes by nitrate of silver solution after operation.

Dr. STODDART BARR confessed that to a certain extent he also advocated packing. In recent years his custom has been to remove the packing on the fifth or sixth day after operation and afterwards to syringe the cavity daily with sterilised saline solution, carefully dry and lightly pack with sterilised gauze. He was convinced that the less one used antiseptic fluids the quicker was the healing process. He had a number of cases also which had not been packed, but in them he did not get such good results. Perhaps recently, however, since the method of avoiding antiseptic fluid and using simply a saline solution was adopted, the results without packing have been more satisfactory. Personally he was convinced that packing at least for the first few weeks gave the best results.

Dr. LOVE thought, in reference to acute cases, as a matter of routine practice, if pus is found the antrum ought to be entered. In such a case one had not done one's duty unless one opened the patient's antrum.

Dr. MILLIGAN said that as the antrum was merely the posterior end of the middle-ear cleft, and as infection (apart from hæmatogenous cases) passed through the antrum before it reached the apical mastoid-cells, it was, in his opinion, a correct surgical procedure invariably to open up the antrum.

Dr. FRASER, in reply, thanked the speakers for their remarks. In performing the modified radical mastoid operation he almost entirely removed the posterior wall of the bony meatus, and in some cases the external wall of the aditus and attic as well. After one or two unfortunate experiences he had come to the conclusion that it was better not to remove tonsils and adenoids at the time of the mastoid operation, but to postpone this proceeding for a week or ten days. Dr. Logan Turner had referred to Case 36 in which the attic cannula was used (*Brit. Med. Journ.*, November 26, 1910); during syringing the patient became giddy and pale and fell over. He thought the stapes had been dislocated into the vestibule, and this theory was confirmed at operation. The patient was, therefore, really suffering from acute infection of the labyrinth, which was followed by acute purulent meningitis. By operation on the inner ear he had hoped to stay the progress of the disease. As to the operation on the temporo-sphenoidal lobe the consulting physician must be held partially responsible. In regard to the final results of the radical mastoid operation he had had seventeen dry out of twenty-six patients who reported. He hoped others would ask their radical mastoid cases to return and report the number of cures. He thought the non-packing method was easier for the patient and for the surgeon, and more successful in producing rapid healing of the cavity with retention of the outline of the inner wall. He was sorry he had written anything about the "plastic" as this was almost entirely a matter of the personal equation; he himself had not had much experi-

ence of flaps other than Körner's. He did not agree with what Dr. Milligan said about closure of the Eustachian tube. After the radical operation had been performed the suppurative catarrh continued in the tube in many cases, and to attempt to close it was like pulling down the roll-top of a desk to hide the untidy contents and make things look nice on the outside. The ideal method was to cure the tubal catarrh by washing out, inflation and injection, but if the tube was to be closed some efficient method of doing so would have to be found. He did not agree that it was good practice to leave the antrum unopened in the operation for acute mastoiditis; in the only case (29) in which he had done so the patient died, but in this instance the tympanic membrane was almost normal before operation, and the patient could hear the whispered voice at 3 ft. It was the "blood-clot" case, and before the patient left hospital he could hear the whisper at 12 ft. Subsequent microscopical examination of the inner ear had shown that the labyrinth had been infected through the round window, but this, obviously, must have occurred after the patient had left the infirmary. He agreed with Dr. Milligan as to the pathology of cholesteatoma, but, as one microscopic specimen exhibited that day showed, the cavity formed by the radical operation came to be lined by an epithelium identical with that found in cholesteatoma cases. He did not see, therefore, why Nature's efforts should be wasted. He had never seen cholesteatoma invade the bone in any of his microscopic cases.

Severe Recurring Attacks of Hæmorrhage from the Left Ear necessitating Ligation of the Common Carotid Artery.—**Dr. A. Logan Turner.**—D. B.—, aged eight, was admitted on March 6, 1911, with a history of pain in the left ear, followed by considerable hæmorrhage. Duration of the affection about one week. No history of previous ear trouble. An injury was denied both by the child and by her mother. No history of cold or sore throat. On admission, temperature 99.2° F.; pulse 120; tongue furred; left meatus contained a good deal of clotted blood obscuring the *membrana tympani*; slight mastoid tenderness. A diagnosis of acute hæmorrhagic otitis media was made and the patient was sent to bed. On the night of admission a *severe hæmorrhage* occurred, staining pillow, sheet, and nightdress. The house-surgeon controlled the bleeding by plugging the meatus. After syringing the ear on the following day, the *membrana tympani* appeared to be red and bulging, and the hearing was considerably impaired. The left lateral pharyngeal wall looked red and swollen. March 9.—*Severe arterial hæmorrhage* this morning. Under chloroform, the mastoid cells and the antrum opened, no blood or pus found in them; posterior cartilaginous wall of meatus detached and deep meatus examined; no foreign body; oozing of blood seemed to come from the floor of the deep meatus, but probing did not induce serious hæmorrhage. Meatus plugged and posterior wound sutured. March 14.—*Sudden severe arterial hæmorrhage*, soaking dressings and bed-linen, also bleeding from the nose for the first time. Complete mastoid operation; neither the internal carotid artery nor the jugular bulb could be seen or felt. A venous oozing took place from the floor of the meatus at its inner end, and a bent probe passed through it could be made to pass outwards beneath the floor of the meatus. A gutter was accordingly made in the floor by chiselling away the bone, but no hæmorrhage could be induced. The bone cavity was firmly plugged. March 19.—Plug removed; *severe arterial hæmorrhage*, spurting on to neighbouring wall; with difficulty controlled by plug and compression

of common carotid artery. Without further delay common carotid ligatured by Mr. Dowden. No further hæmorrhage occurred, and patient made a slow but uninterrupted recovery. March 20.—Patient has right hemiplegia incomplete. No aphasia: no interference with intellectual faculties. Under massage, gradual recovery of power in limbs.

Patient, one year and eight months after Thyrotomy for Epithelioma of the Right Vocal Cord.—Dr. A. Logan Turner.

A. L.—, aged fifty-three, had suffered from hoarseness for twelve months. In March, 1910, the right vocal cord presented a thickened, fringed appearance, with a good deal of heaping up. The infiltration had a white, finely granular surface. The disease involved the anterior two thirds of the cord. The false cord and ventricle appeared free from disease. The mobility of the vocal cord was slightly impaired. The anterior end of the left vocal cord was invisible. A piece of the tissue removed through the mouth demonstrated microscopically a squamous-celled epithelioma. By thyrotomy the whole of the right vocal cord and the edge of the false cord removed with the tissues down to the thyroid cartilage. The anterior third of the left vocal cord removed on account of a suspicious appearance at the anterior commissure. In July and September, 1910, a granulation was removed from the anterior commissure. The pathologist reported upon it as of simple nature. November 11, 1911, no recurrence of the disease. Patient has no power of vocalisation.

Toy Metal Pipe Removed from the Right Bronchus of a Boy, aged seven (with Skiagram).—Dr. A. Logan Turner.—W. B.—, aged seven, while at play and holding between his lips a small metal pipe which he had obtained from a "lucky bag," suddenly inspired it. He refrained from telling his parents about the accident. He had no symptoms of cough or choking, but he wheezed a good deal, especially when running about, and he often had to sit down and rest on account of loss of breath. His parents thought he had developed asthma, and took very little notice of his condition. Five weeks after the accident, however, they called in a doctor, who suspected a foreign body. Examination of the chest revealed faint breath-sounds over the lower lobe behind, and diminished vocal resonance; wheezing and bronchi were heard all over the chest, most marked in the interscapular region; no bronchitis. A skiagram of the chest showed a foreign body lying obliquely at the level of and between the bodies of the fourth and fifth dorsal vertebræ on the right side. Removal under chloroform by direct upper bronchoscopy.

Dr. MILLIGAN showed two X-ray photographs of cases recently under his care. One was a stone in the lung. The history was interesting. The patient was running with the barriers and was sucking a stone; something made him take a deep inspiration and the stone was inhaled into the lower end of the right bronchus. The accident happened in the south of England and the patient was taken to one of the London hospitals and X-rayed, but nothing was found. About a fortnight or three weeks later he was brought into the Manchester Royal Infirmary and again X-rayed. Under chloroform the stone was extracted. Dr. Milligan had the greatest difficulty in getting the stone out; it was so smooth that the necessary force required caused the forceps to slip off; it was only by taking a long probe and giving it a little twist and curve that he managed to hook the stone. The second case was the metal end

of a lead pencil. The patient was brought into the Infirmary with acute pneumonia and a history of having inhaled the pencil. He was so ill that he could not even be X-rayed at the time. The pneumonia was treated, and after a certain amount of improvement an X-ray examination was made and the foreign body removed; the pneumonia, which had not entirely resolved at the time of the operation, immediately resolved and the patient got quite well. He asked if in the case of smooth foreign bodies in the bronchus there was any particular method of removing them?

Dr. CONNALL asked Dr. Logan Turner in what position he had the head during the examination. His experience of bronchoscopy was limited to one case, that of a broken tracheotomy tube in the bronchus, and on operating he had the advantage of working through the tracheotomy wound (lower bronchoscopy). In œsophageal work he found it better to use the Kirstein's head lamp.

Dr. WALKER DOWNIE said in dealing with smooth foreign bodies he had employed a long probe which was introduced through the tracheotomy opening and passed down the side of the foreign body so as to allow air to get behind it. As soon as the air was admitted, coughing was produced and the body expelled. Another instance was that of a boy brought from school to the Western Infirmary with a pin, which had been inhaled and had entered one of the bronchi as shown by X rays. The patient was inverted, smacked firmly between the shoulders, and the pin was expelled.

Dr. ADAM asked Dr. Milligan if he had tried inversion.

Dr. LOGAN TURNER, in replying, said the foreign body could not be drawn into the tube, and below the vocal cord the forceps came off; at the second time the body broke in two, and on bringing it out it came in two pieces. The trauma produced subglottic œdema, and tracheotomy was required forty-eight hours after the operation. The position employed was with the head over the table and held laterally. There was nothing better for operative work than Kirstein's head lamp, but he always used Brünings' handle for simple examination purposes.

Case for Diagnosis.—Drs. A. Logan Turner and J. S. Fraser.

—J. G.—, male, aged thirty, grocer, was first seen on September 1, 1911, complaining of right-sided nasal obstruction and pain, and of discharge from both ears for many years. Patient denies venereal disease. *Examination.*—The right inferior turbinal was found to be large and red, and the right nostril contained pus. Both tympanic membranes showed central perforations with polypoid projections of tympanic mucosa. On posterior rhinoscopy, ulceration of the posterior surface of the soft palate was seen. There also seemed to be ulceration of the posterior border of the septum. Three weeks later the right inferior turbinal was removed. The forceps went through the turbinal much more easily than usual, and pus appeared to ooze from the cut surface of the turbinal. On microscopic section a very dense leucocytic infiltration of the submucous tissue was seen, but no tubercle nodules. Von Pirquet's reaction was markedly positive, and the Wassermann reaction was negative. Polypoid tissue was removed from the left tympanic cavity and submitted to microscopic examination. Sections showed vascular granulation-tissue covered by squamous epithelium; the granulation-tissue showed many mononuclear cells. No evidence of tubercle. Patient reported on October 13, complaining of watering of the right eye, and of slight swelling of the nose externally on the right side. Swab taken from pus from right nasal

cavity shows pneumococcus and *Staphylococcus aureus*. Examination of lungs normal; family history good. Is case one of chronic pneumococcal infection?

Dr. KELLY did not see why this case was not tertiary or congenital syphilis.

Dr. MILLIGAN had seen a suspicious mark on the back of the palate.

Dr. SYME asked if it had not been for the negative Wassermann, would Dr. Turner have considered it syphilis?

Laryngeal Case for Diagnosis.—Drs. A. Logan Turner and J. S. Fraser.—E. M.—, male, aged twenty-six, basket-maker, was under the care of Dr. Macintyre in the Glasgow Royal Infirmary in July, 1906. At that time he complained of hoarseness and breathlessness on exertion of seventeen months' duration. He had also suffered from glandular enlargement in the neck, but this had subsided and had not reappeared till three months before admission. His eyes became cloudy when he was fourteen years of age. Patient says the eye trouble was due to injury to one eye, and that the other eye was sympathetically affected. He denies any history of acquired syphilis. *Notes by Dr. Macintyre.*—On admission to Glasgow Royal Infirmary, patient had a mass about the size of a hen's egg, midway between the thyroid cartilage and the clavicle. The marks of a former glandular abscess were also seen in the posterior triangle. Patient's breathing was noisy, but there was no dyspnoea. The sputum was examined for tubercle with a negative result, and no definite lesion was found in the lungs. Dr. Macintyre examined the larynx and found a pyriform swelling of the left ary-epiglottidean fold. Both false cords were also slightly swollen, preventing a view of the true cords. Patient had a temperature at that time which varied between 106° and 103·6° F.

Patient was next seen by one of exhibitors (J.S.F.) in May, 1907, when he stated that the swelling in the neck had burst of itself, and had healed up in three weeks. There was no history of night-sweats and no family history of tubercle. On examination the epiglottis was normal: both ary-epiglottic folds were swollen, the left more than the right. The right side moved a little on phonation. On August 29, 1911, patient returned complaining of deafness and noises in the head, of two years' duration. Patient's teeth are not of the Hutchinson type. The condition of the larynx seemed to be very much as it had been at his previous visit. The left tympanic membrane showed a chalk patch in front of the mallens, but the right tympanic membrane was normal. Watch not heard by air- or bone-conduction. C32, C64, C128, and C256 are heard by the right ear, not by the left. Schwabach shortened; Weber to right (better) ear; Rinne positive, right ear; apparently negative, left ear. Considerable loss of upper tones. Von Pirquet reaction positive. Wassermann reaction negative. Examination of sputum showed no tubercle bacilli. On September 4, 1911, Dr. J. V. Paterson examined patient's eyes, and reported as follows: "This man has apparently had severe interstitial keratitis in early youth. In 1903 he was under Dr. Mackay in this department, and had iridectomies done, and the left lens removed. The fundi are normal, except for a few discoloured spots, probably old choroidal mischief." There seemed to be little doubt that the patient had congenital syphilis. The opinion of the meeting was asked as to whether the laryngeal condition is specific or tubercular.

Dr. KELLY said that the case might be tuberculous, but that congenital syphilis more probably was the underlying disease. One sometimes got appearances such as those present in the diffuse hyperplastic laryngitis of

congenital syphilis. This variety did not yield to antisypilitic treatment. The condition was further peculiar in that the hyperplasia might suddenly become cedematous and cause grave symptoms.

Dr. SYME suggested the use of fibrolysin in these cases.

Dr. WALKER DOWNIE agreed with Dr. Kelly that the case was one of congenital syphilis.

Dr. LOGAN TURNER, replying, said he was interested to hear the opinion of the Society on both these cases; he was under the impression that the former case had had iodide and mercury, but he apparently was wrong. It was interesting that in both cases the Wassermann was negative and in both the Von Pirquet was positive.

Dr. FRASER said it was stated that the latter patient had congenital syphilis: the question was whether the laryngeal condition is tuberculous on the top of the congenital syphilis? In congenital syphilis the Wassermann reaction is not reliable after the age of sixteen.

Dr. SYME said a positive Von Pirquet was got in about 90 per cent. of adults.

Dr. CHRISTIE said the case was interesting in as much as all seemed agreed that it was specific although the Wassermann was negative.

Dr. MALCOLM FARQUHARSON said in about 30 per cent.—one third—of cases of congenital syphilis the Wassermann reaction fails.

Injury to the Ear in Cases of Fracture of the Base.—Dr. J. S. Fraser.—CASE 1.—J. P.—, male, aged fifty-four, was knocked down by a cable car (December 6, 1910) while stepping out of the way of a motor. No definite history as to how he fell. Patient was at once admitted to Mr. Cathcart's wards in the Edinburgh Royal Infirmary (2 p.m.), and was found to be restless and irritable; face pale; temperature 96.2° F.; pulse 64; profuse bleeding from *right* ear. Between 5 and 6 p.m. patient became comatose; stertorous breathing; the left arm seemed more lax than the right. At 7 p.m. Mr. Cathcart trephined over the right temporal region; no extra-dural clot; on incising the dura dark blood escaped; the trephine wound was enlarged downwards and a small drainage-tube inserted. After operation the breathing became less stertorous, but at 11 p.m. patient became noisy and the stertorous breathing came on again. Pulse 140; temperature 101.4° F. The patient died at 3 a.m. (December 7, 1910). *Post-mortem*.—The fracture extends from anterior part of left middle fossa obliquely upwards and backwards through lambda to right squamo-temporal region. The fracture now passes along the roof of the right middle-ear cleft; the tegmen tympani is almost entirely separated; tympanic cavity full of blood-clot. On reaching the roof of the antrum the fracture turns inwards about half an inch behind the arcuate eminence and then passes down to the inner surface of the mastoid; mastoid cells full of blood; jugular bulb not injured. The left middle meningeal artery is torn, and the tip of the left temporo-sphenoidal lobe lacerated. On microscopic examination there is no large hæmorrhage into the inner ear spaces, but small bleedings are noted in the vestibular nerve and in the modiolus; the tympanic cavity contains a quantity of blood.

CASE 2.—P. B.—, aged forty-one, male, fell from a scaffolding a distance of nine feet (November 1, 1910). He was brought to the Edinburgh Royal Infirmary by the police, who stated that, when found, he was conscious, but was bleeding from the *right* ear; patient also complained of pain in the right shoulder. On examination patient was found to be pale; pulse feeble (92); flow of blood and *cerebro-spinal fluid from right*

ear; patient conscious but very deaf. Soon after admission patient became unconscious; breathing became stertorous and general convulsions occurred; the eyes were turned to the right (side of lesion); and, later, squinting was noted, the right eye being turned further to the right than the left one; right pupil larger than left. The left side of the face and left arm became paralysed, and the respiration assumed the Cheyne-Stokes' character. Pulse slowed to 76. Mr. Catheart decided to trephine over the right temporal region. Fissured fracture found running downwards and backwards over the temporal fossa; large clot of blood external to dura mater. In spite of enlargement of the trephine hole the bleeding point could not be found; the external carotid was therefore ligatured and the hæmorrhage stopped; drainage-tube inserted and wound stitched. Patient got gradually worse; pulse became rapid and feeble; death eight hours after operation. *Post-mortem*.—Considerable amount of clot behind trephine opening; brain had not expanded; bleeding had occurred from middle meningeal; no laceration of brain. The fracture ran along the roof of the mastoid antrum and tympanic cavity, and then forward and upward. In preparing the specimen, the outer part of the tympanic cavity, with the malleus, incus, and membrane, became separated and were removed. Very little blood in tympanic cavity, but submucous hæmorrhage seen in region of oval window and posterior part of promontory. Some blood in Eustachian tube and also in mastoid antrum. On microscopic examination, there is a large hæmorrhage into the labyrinth, both peri- and endo-lymphatic spaces containing blood. The bony labyrinth shows a transverse fracture through the external canal, oval window, and posterior part of the promontory. The fracture reaches the internal meatus at one point, but does not reach the posterior surface of the petrous pyramid. There is hæmorrhage into some of the air-cells surrounding the inner ear.

Temporo-sphenoidal Abscess.—**Dr. Kerr Love.**—J. F——, aged forty-nine, was admitted to the Glasgow Royal Infirmary on November 10, 1911, at 1 p.m., in a semi-conscious condition. Since the age of six years patient had had intermittent discharge from his left ear. The organ had been functionless for thirty years. His general health during this period had been good. Beyond some deafness, patient had never complained of his right ear till seven days before his admission. Fourteen days before admission patient had a fall, alighting on the right side of his head from a height of 4 to 5 ft., and to this he ascribed his present illness. He was off work one day. Seven days before admission there was some discharge noted from the right ear, and patient complained of severe headache. He suffered intermittently from headache from the time of accident till onset of illness. No rigor was noticed. Five days before admission patient became semi-conscious, and had remained in that condition till admitted. On admission, patient partly conscious. He had great difficulty in hearing any questions, and his answers were irrelevant and delayed. Pupils were equal, and reacted sluggishly to light. There was slight rigidity of the neck. Patient could move all his limbs freely. Knee-jerks normal. There was purulent discharge from both ears. The membrana tympani was gone on the left side. On the right side the view of the middle ear was obstructed by a narrowing of the meatus. There was marked mastoid tenderness. Temperature, 99·6° F.; pulse, 84; leucocytes, 20,000. After admission, patient remained in a restless condition till about 6.30 a.m. on the morning of the 11th, when he suddenly became completely unconscious. His temperature rose to 104·6° F.; pulse, 120. No rigor was noticed. His left pupil

was normal in size, but fixed. The right pupil was contracted and fixed. There was marked rigidity of the neck, and Kernig's sign was present. Knee-jerks exaggerated. Exhibitor operated at 11.30 a.m. Patient died at 10.45 p.m. Lumbar puncture was performed at 7 p.m. The fluid came out under high pressure, and was slightly blood-stained. It coagulated about five minutes after withdrawal. Films showed scattered clusters of staphylococci. Films of the pus from the cerebral abscess showed capsulated diplococci, staphylococci, and a large bacillus—all in abundance. At the operation a large temporo-sphenoidal abscess was drained through the tegmen tympani. The dura was sloughy, and there was also an extra-dural collection of pus. At the *post mortem* examination basal meningitis was found, and a rupture of the abscess into the lateral ventricle had occurred.

Malignant Disease of the Auricle, Parotid Gland, and Pterygoid Fossa.—**Dr. Kerr Love.**—J. F.—, male, aged seventy, was admitted to Glasgow Royal Infirmary on November 8, 1911. His illness began during his incarceration at Peterhead Prison, and on account of it he was permitted to leave prison (with two years' sentence to run) fourteen days before his admission. In June, 1911, he noticed that a small nodule had formed behind the lower part of his left ear. He ascribed the origin of the condition to the wearing of spectacles with an ear catch, the extremity of which rested and rubbed on the area where the sore subsequently developed. The nodule grew slowly in size, and ulceration commenced after five weeks. Growth then became more rapid, and the ulcer had gradually spread until it measured 4 in. by 4 in. The treatment at Peterhead consisted of the application of caustics, the condition being evidently thought to be carbuncle. On admission, the ulcer was covered with foul-smelling sloughs. The lower part of the auricle had its attachment to the face sloughed away, and was lying on the surface of the sore. The upper margin of the sore was at the level of the external auditory meatus. The growth was slightly movable on the subjacent structure. No glands could be felt in the supra-clavicular region, or in the posterior triangle of the neck. The operation was performed on November 9. The whole auricle was removed, the parotid gland, which was involved, was removed, and some affected glands were removed from the pterygoid fossa and from the outer surface of the sternomastoid muscle. The middle ear was not involved, nor was the lower jaw.

AUSTRIAN OTOLOGICAL SOCIETY.

Meeting of October 30, 1911.

PROF. VON URBANTSCHITSCH *in the Chair.*

(*Abstract of Proceedings from advanced proofs sent by Dr. HUGO FREY.*)

Case of Acute Purulent Labyrinthitis with Meningitis.—**G. Bondy.**—Patient was a man, aged thirty, who three days before had suffered with giddiness, staggering and vomiting. Examination showed

chronic suppurative otitis media with acute invasion of the labyrinth. (Complete deafness and loss of caloric response, spontaneous nystagmus to the sound side.) No symptom of meningitis: normal temperature, and otherwise perfectly well. Sudden onset of headache on the next day. Labyrinth operation; headache worse; twenty-two hours after commencement of headache, death. *Post-mortem*: Acute purulent basal and convex meningitis. The case illustrates that we are as yet unable to distinguish between harmless and dangerous forms of labyrinthitis, that meningitis at its commencement may be symptomless, and that, therefore, operation should be at once performed on every case of acute purulent labyrinthitis.

Bilateral Traumatic Rupture of the Tympanic Membranes and External Auditory Meatus from a Sudden Fall on the Left Side of the Head in a Case of Hæmophilia.—Ernst Urbantschitsch.

—A man, aged forty-two, fell on the left side of his head October 21, 1911. No loss of consciousness, giddiness or vomiting. He was carried home and put to bed, when the pillow was soon soaked with blood from both ears, and pain therein prevented the mouth being opened. Iodoform gauze dressing. Three days later examination showed Rinne positive both sides, Weber to the left. Bone-conduction normal, Cv. at 7 metres, Whp. right at 2-5 cm., left 4-7 cm. Bleeding continued for six days. On the seventh day after the accident inspection of the fundus revealed a ragged tear in the postero-inferior quadrant of each membrane and a similar lesion at the junction of the cartilaginous and bony meatus on each side. Bleeding ceased on the ninth day. The possibility of fracture of the base was considered, and excluded owing to the lack of symptoms. Examination of the blood by Wright's method showed a marked delay in the coagulability, but no support could be obtained from the patient's history in regard to the diagnosis of hæmophilia. (It is at least somewhat remarkable that this explanation of the hæmorrhage in this case does not appear to have aroused any comment. —A. R. T.)

Abscess of the Left Temporo-sphenoidal Lobe without Symptoms; Operation; Cure.—O. Beck.—A left-sided otorrhœa in a boy, aged seven, which commenced in July, 1911, necessitated opening of the mastoid on the 17th of that month, when a large amount of pus was found in the cells. During the after-treatment a copious discharge of muco-pus from the retro-auricular wound occurred at each dressing. On September 10, as the mother reported that the child had suffered with intense headache, he was readmitted to hospital. The almost stupidly happy mental condition of the boy suggested to Beck the possibility of a temporo-sphenoidal abscess, and as a slight facial paresis appeared the wound was explored under chloroform. All looked healthy with the exception of the neighbourhood of the zygoma, where the bone was softened. Removal of this with a sharp spoon led to the exposure of the dura in the middle fossa, which was found to be covered with granulations. This was therefore opened, and after incision of the brain about a drachm of fœtid pus evacuated. Collapse after the operation necessitated artificial respiration and injection of camphor. The wound was now closing healthily. The interesting point was the absence of those symptoms which one would expect with an abscess in this situation.

Syphilitic Labyrinthitis with Remarkable Response.—O. Beck.

—Reference to this case had already been made at the July meeting. Six weeks after an injection of salvarsan in February the patient, a woman, had become completely deaf on the left side, and had remained so till the beginning of August, when almost immediately after an injection of "Hg-salicyl" the hearing improved to 4 m. for Cv. and $\frac{1}{2}$ m. for Whp. Towards the end of September a papular eruption occurred in the meatus, later becoming generalised. During this period the vestibule was quite unresponsive to rotation, but showed a hypersensitivity to the caloric test, either hot or cold. The hearing remained the same. After a course of inunction the vestibular response to all tests became normal, although no further change in the hearing took place.

A Case of Paralabyrinthitis; Interesting Functional Condition of which Operation afforded an Explanation.—Hugo Frey.

—A girl, aged twelve, who had suffered with left otorrhœa for ten years, applied for treatment stating that for some months past she had had giddiness and headache. The tympanic membrane was almost completely absent and the cavity filled with exuberant granulations. Hearing reduced to Cv. $\frac{1}{2}$ m.; Weber to the sound side, spontaneous nystagmus. Caloric test evoked nystagmus under all conditions even with the water at body temperature; fistular symptom negative. The condition suggested some lesion in close proximity to the labyrinth. At the radical operation the antrum was found filled with granulations extending on to the inner wall of the aditus, beneath which latter the bone was softened, although no definite fistula into the horizontal canal could be found. The wound was now, three weeks after the operation, healing normally. The headache and giddiness had ceased at once. Hearing was now improved and Weber lateralised to the diseased side.

ALEXANDER remarked that two main types existed in the bony construction of the region under discussion—one in which the bone around the canal was composed of compact tissue and another in which pneumatic cells preponderated, and between these two types many variants were found.

RUTIN considered an increased vestibular response in these cases did not necessarily imply an increased sensibility, but might mean a better conduction of the stimulus. He had already pointed out that cases with the fistular symptom are less sensitive to the physiological tests.

Destruction of the Vestibular Apparatus by Salvarsan.—

Neumann.—A man, aged twenty, who had received an injection of salvarsan (0.6), about four weeks afterwards noticed an uncertainty in his gait and the appearance of tinnitus on the left side. Hearing was considerably reduced on this side, Weber not lateralised, Rinne positive, lower tones normal, higher tones reduced; vestibular apparatus, although not normal, was still responsive. Some two weeks later the tinnitus and giddiness were less noticeable, but four months after the injection they reappeared as before. The condition of the hearing remained unaltered, but on directing the eyes to the right and left a rotatory nystagmus was evoked in each direction respectively, whilst although rotation produced only a very slight response, and the caloric test almost none, the reaction to galvanism was on both sides normal (cathode 4–5 m.a., anode 7–8 m.a.). At the present time, five months after the injection, direction of the eyes to the right produced a nystagmus, the quick component of which was

towards the right; on looking to the left or directly forwards no nystagmus occurred, but behind opaque glasses spontaneous nystagmus appeared even when looking directly forwards. The duration of the after-rotation nystagmus was reduced to three to four seconds. Caloric response, left side negative, right side only just apparent. Neumann considered that the normal galvanic response indicated the integrity of the retro-labyrinthine portion of the vestibular nerves, that the persistence of the caloric reaction showed an unaltered condition of the lympho-kinetic apparatus, and that the limited effect of rotation must mean a destruction of certain neurons. The state of affairs might perhaps also be explained by the assumption that the vestibules, although too much injured to respond to physiological stimuli, such as rotation, could yet react to artificial stimuli. The fact that the phenomena connected with the left side were heralded by tinnitus, which of itself disappeared, suggested that the causative lesion was not central in position. It would also appear that in this case the vestibular nerve, the usually more resistant branch, was injured by salvarsan to a much greater degree than the cochlear nerve, which in most instances is the more vulnerable of the two. The passage of this nerve through very narrow bony canals on its way to the terminal end-organs would explain this unequal effect. (If this solution be correct one would expect the vestibular nerve always to be the more vulnerable of the two branches.—A. R. T.)

RUTTIN had seen three cases of neuritis—probably rheumatic in origin—of a similar character in which salvarsan had not been exhibited, but was unable to offer a solution of these paradoxical phenomena.
Alex. R. Tweedie.

BRITISH MEDICAL ASSOCIATION MEETING, 1912.

THE 1912 Meeting of the British Medical Association will be held in Liverpool, the Section Meetings beginning on Wednesday, July 24.

The following are the list of office-bearers in the Sections of Otology and Laryngo-Rhinology, which, it should be noted, are this year separate from each other.

Otology.—*President:* Hugh Edward Jones, M.R.C.S., Liverpool. *Vice-Presidents:* Arthur Henry Cheate, F.R.C.S., London, W.; Henry Hanna, M.B., Belfast; James Kerr Love, M.D., Glasgow. *Honorary Secretaries:* Ernest Malcolm Stockdale, M.R.C.S., 67, Rodney Street, Liverpool; Wm. Mayhew Mollison, M.A., M.C., F.R.C.S., Warden's House, Guy's Hospital, London, S.E.; David Lindley Sewell, M.B., B.S., 2, Peter's Square, Manchester.

Laryngology and Rhinology.—*President:* John Middlemass Hunt, M.B., Liverpool. *Vice-Presidents:* John Bark, F.R.C.S.E., Liverpool; Chas. Edward Bean, F.R.C.S.E., Plymouth; James Edlington McDougall, M.B., Liverpool; Wm. Permewan, M.D., F.R.C.S., Liverpool; Robert Hy. Woods, B.A. M.B., F.R.C.S.I., Dublin. *Honorary Secretaries:* Thomas Guthrie, M.A., M.B., F.R.C.S., 55, Rodney Street, Liverpool; Geoffrey Seccombe Hett, M.B., F.R.C.S., 8, Wimpole Street, London, W.

Abstracts.

NOSE.

Smith, Eustace.—**Post-nasal Catarrh in Children and Some of its Consequences.** "Lancet," October 28, 1911, p. 1186.

A thoughtful and very valuable paper dealing with a common and frequently overlooked complaint. Attention is drawn to the relation of nasal catarrh in children to chronic cough, complete loss of appetite, "cyclical vomiting," glottic spasm, acute enlargement of cervical glands, etc. Smith recommends the use of local applications by swabbing or through the nose.

Macleod Yearsley.

PHARYNX.

Murray, Fallane (Toronto).—**Vincent's Angina.** "Canadian Practitioner," June, 1911.

The writer gives the history and clinical description of this peculiar form of angina, together with the conclusions of Vincent and others upon it, quoting various cases, and referring to the increased frequency with which it seems of late to occur.

The article closes with a report of three cases which had been treated by the writer: two were journalists, aged respectively twenty-seven and thirty-two, the other was a young lady, a student of music, aged twenty-three. Microscopical examination in each case found the pathognomonic spirillæ. In the first one, there was little or no involvement of the adjacent structures. Swelling of faucial tonsils was absent, as also were pain and odour. The left tonsil was covered by a yellow creamy membrane, surrounded by a scarlet line, external to which was a moth-eaten appearance of the tissues. In the second case the tonsils were abnormally enlarged. On examination, two deep excavations were found in the left tonsil, bearing the appearance of having been punched out. Remnants of membrane were seen between the ulcers. Glandular involvement, pain and fever were all very slight. In the third case the throat was exceedingly sore. The affected tonsil was large, with pus oozing from several points in it and the neighbouring fauces. The young lady was subject to quinsy. Breath was foul. Temperature 100° F.

In all these cases, recovery occurred in a short time and was uneventful. The treatment was the administration of potassium iodide and the local application of tincture of iodine and peroxide of hydrogen.

Price-Brown.

Place, Edwin H.—**Vincent's Angina.** "Boston Med. and Surg. Journ.," November 9, 1911, p. 720.

The author briefly describes the bacteriology of this condition and its history. The writer has seen over eighty cases and gives his experiences, discussing the relation of the fusiform bacillus to other diseases, as syphilis, diphtheria, etc. Five of his cases showed positive cultures for diphtheria. In noma the fusiform bacillus is invariably found. In one case, pulmonary gangrene occurred after removal of twelve teeth under ether, the lung becoming inoculated from a tooth, part of which was coughed up. The specific nature of the infection in Vincent's angina is suggested by (1) the tremendous number of organisms in the typical

lesions; (2) the fair constancy of the clinical and bacterial picture; (3) the disappearance of the organisms as the healing process begins. The disease is no doubt often confused with diphtheria, syphilis, stomatitis, tonsillitis, etc. Place finds peroxide of hydrogen swabbing until the ulcers are pretty clean and then painting with 2 per cent. solution of chromic acid twice daily the best treatment.

MacLeod Yearsley.

Pusateri, S. (Palermo).—Chronic Vincent's Angina. "Archiv. f. Laryngol.," vol. xxv, Part III.

In the case reported, that of a man, aged twenty-six, the disease had apparently been present for a year before the patient came under the author's notice. Bacteriological examination showed the presence of the fusiform bacillus and spirillum. The ulceration involved the left tonsil, the bed of the right tonsil which had been destroyed, and portions of the faucial pillars. Treatment consisted of local applications of 3½ per cent. zinc chloride solution and 2 per cent. glycerine iodi, with a fluid diet and intestinal disinfection. Healing was complete three months after the case was first seen by the writer. The angina was never accompanied by stomatitis.

Thomas Guthrie.

LARYNX.

Thomson, StClair.—Intrinsic Cancer of the Larynx; Operation by Laryngo-fissure; Lasting Cure in 80 per cent. of Cases. "Brit. Med. Journ.," February 17, 1912.

Cases of cancer of the larynx may be divided into two groups—*intrinsic* and *extrinsic*. This classification is of the greatest importance, for while *extrinsic* cancer is, according to Butlin, "a dire disease," it is quite otherwise with *intrinsic* cancer; there is probably no other region of the body where operation for cancer can show anything like the satisfactory results that can be obtained when the disease occurs in the interior of the larynx and is removed by laryngo-fissure.

There are two principal reasons why statistics and reports are not more frequently forthcoming: (1) Many cases do not consult a laryngologist for a persistent hoarseness until too advanced for a successful operation, and (2) cancer of the larynx is not a common disease.

Ten cases were operated on between the years 1900 and 1910, a period of ten years.

These ten cases are summarised in the table on p. 179.

The duration of the cure in each case from the date of operation to February, 1912, has been as follows:

One case, 7½ years; one case, 4 years 4 months; one case, 3 years; one case, 2 years 2 months since laryngectomy; one case, 2 years 1 month; two cases, 1 year 3 months; one case died from other causes 15 months after operation; one case died from cancer of tongue on opposite side 3 years after operation and without local recurrence; one case died from local recurrence. Total, ten cases.

The conclusions to be drawn from this record can be stated fairly briefly:

All the patients were males. Their ages varied between 43 and 68. Five, or 50 per cent., were under 50, four were between 50 and 60, one was nearly 70. In no case did thyrotomy reveal any error of diagnosis. The death-rate from the operation was *nil*. Only one case is dead from local recurrence. A second case died from separate develop-

Case.	Sex and age.	Duration of sickness.	Kept under observation.	Enlarged glands.	Movement of vocal cord.	Preliminary microscopic examination.	Halm's tube.	Pathological report.	Recurrence.
I	M., 47	3 months	4 months	None	Good	Not made	Used	Epithelioma	None locally. Death from cancer of opposite side of tongue 3 years later.
II	M., 49	2 years	—	Small gland on crico-thyroid membrane	Abolished	"	"	Carcinoma	None at end of 15 months. Death from other causes.
III	M., 48	13 months	9 months	Slight on opposite side	Slightly impaired	"	"	Epithelioma	None after 7 years 6 months.
IV	M., 49	6 months	1 month	None	Ditto	"	"	"	Recurrence in 8 months. ^a Death.
V	M., 54	1 year	—	"	Abolished	"	Not used	"	None after 4 years 4 months.
VI	M., 59	3 months	—	"	Good	Positive	"	"	None after 3 years.
VII	M., 43	1 year	—	"	Slightly impaired	Not made	"	"	Recurrence in 9 months. Laryngectomy. No recurrence since 2 years 2 months.
VIII	M., 58	6 months	—	"	Good	Positive	"	"	None after 2 years 1 month.
IX	M., 68	3 months	—	"	"	Not made	"	"	None after 1 year 3 months.
X	M., 55	7 months	—	"	Abolished	Negative	"	"	" " "

ment of cancer in another part of the body. A third patient is dead from another cause. Laryngo-fissure alone has yielded a lasting cure in 80 per cent. of cases. Laryngo-fissure, supplemented by excision of the larynx in a case of local recurrence, has preserved 90 per cent. of the patients. In the only two cases in which there was local recurrence the disease reappeared within the year following the operation of laryngo-fissure. This fully confirms Sir Felix Semon's conclusion that there is little or no anxiety as to return of intrinsic cancer if the larynx remains free for twelve months.

Some points of diagnosis—mobility of the affected cord and preliminary microscopic examination of removed portion—are then referred to, and the paper concludes with some consideration of anaesthesia and surgical technique. *Author's abstract.*

EAR.

Snow, Sargent F.—Acute Middle-ear and Mastoid Inflammations: The Relations of Active Auto-intoxications. "Lancet," October 14, 1911, p. 1070.

Snow draws attention to the fact that constitutional as well as surgical treatment is called for in these cases, and that closer observations on acute pharyngeal, nasal, sinus, middle-ear and mastoid inflammations are invariably related to an active autotoxic state of the system. He considers mercury, iodine, and similar "alteratives" are antigens. He prescribes calomel in doses of $\frac{1}{10}$ gr., frequently repeated up to 1-1½ gr., followed by a dose of castor-oil and salines. This plan is repeated in two days and continued every second day until active symptoms are subsiding. During convalescence, calomel, in good dosage at least every five days, is given as an intestinal cleanser, glandular stimulant, and corrective. *Macleod Yearsley.*

REVIEWS.

A Practical Handbook of the Diseases of the Ear for Senior Students and Practitioners. By WILLIAM MILLIGAN, M.D., Aurist and Laryngologist to the Royal Infirmary, Manchester, etc., and WYATT WINGRAVE, M.D., Pathologist to the Central London Throat and Ear Hospital, and to the Polyclinic, London. With 293 illustrations and 6 coloured plates. Pp. 596. London: Macmillan & Co., 1911.

The book before us is decidedly a remarkable work, destined to pass through numerous editions. It is of course a conscientious and, at the same time, a compendious study of diseases of the ear, but it has the special characteristic of being founded on original investigations into the bedside and laboratory pathology of the organ of hearing, unhampered by traditions. The authors are well known in their respective spheres, and accordingly the subject is vigorously dealt with from both points of view. There is an interesting sketch of the development of the ear, containing much information in few words, followed by a chapter on the anatomy from the naked eye and microscopical points of view, the latest edition of "Quain's Anatomy" being drawn upon for a few of the illustrations, the majority being, however, from original preparations and

specimens. This, as well as the chapter on physiology, is kept within comparatively narrow limits, reference being given to the best sources of further information.

The description of the methods of examination is very complete, nothing of any material importance being omitted. There are numerous excellent illustrations of the diseases of the auricle, those of the microscopical appearances being particularly good and instructive. The important condition of epithelioma of the meatus is not mentioned under the heading of diseases of that part, but is found in the section on diseases of the auricle. In another edition we think its incidence in the meatus might advantageously be more distinctly emphasised. The section on the anatomy of the middle ear is most valuable, and is rendered still more so by the references to the development of the ear, which explains some of its pathological peculiarities. We are pleased to see that a chapter, although only a short one, is devoted to the inflammatory affections of the membrana tympani, which some authors are apt to ignore. Traumatic rupture of the membrana tympani is well described, but we think the striking pallor of the inner wall, as compared with the redness seen through inflammatory perforations, might receive notice. The characteristic ease with which the Valsalvan experiment can be performed is mentioned under the heading of prognosis, but it might well have been introduced into the general clinical picture (p. 174). Among the non-suppurative diseases of the middle ear, *otitis media catarrhalis* receives a very full description. The *paraculis Willisii* is mentioned under this heading (p. 177) as being "sometimes complained of, although not so frequently as in cases of dry middle-ear catarrh and otosclerosis." It might well have found a place among the subjective symptoms of *otitis media catarrhalis chronica* (p. 189). The value of auto-massage, auto-inflation, vibration from cycling, use of instruments, etc., is stated as being very problematical (p. 193). The treatment of the nasal and naso-pharyngeal mucosa is very properly insisted on (p. 194), and the authors have added greatly to the value of the work by giving, in Chapters XL XLIV, an admirable *resumé* of much knowledge of diseases of the throat, nose, and naso-pharynx, especially in their bearing upon diseases of the ear. The modernity of the work is typified by the fact that otosclerosis, instead of being considered under the heading of inflammatory diseases of the middle ear, has a synonym, *Capsulitis labyrinthi*, and is placed among diseases of the labyrinth (Chapter XXXIV). Here it is exceptionally well described from all points of view, and the students of this disheartening subject will find the chapter a most informing and suggestive one.

As is natural, suppurative diseases with their complications and sequelæ occupy about 233 pages, each one being full of information. The pathological cytology and bacteriology form a very important constituent in their study, and there is probably not an equally thorough consideration of these two subjects to be found in any other text-book. The tenderness over the mastoid, often present in acute suppuration of the middle ear, both to pressure and percussion (p. 202) is mentioned, but the generally received statement, dogmatically formulated by Körner, that this tenderness is of comparatively little significance during the first week of the disease, might be added. The treatment of this disease is probably the most responsible duty of the aural or indeed any other surgeon, and the sections devoted to it deserve careful reading. Bier's method of induced hyperæmia is very clearly described, and the results, as derived from published German reports, are given, though, according

to the writers, its limitations are very narrow (p. 208). Attic suppuration, both acute and chronic, is fully discussed. Aurists have reason to feel grateful to Dr. Milligan for the excellent intra-tympanic syringe (fig. 107) which he devised, and it is difficult to see why another should be invented. There is the usual illustration of attic forceps taking a good bite of the external wall of the attic, but the authors are wisely cautious in promising much from its use (p. 216). The limitations of ossiculectomy are very rationally pointed out, but it is admitted as beyond doubt that it facilitates drainage, permits at times of the extrusion of cholesteatomata, and so relieves urgent symptoms. The mode of carrying it out is well given, and various excellent instruments are described and illustrated (p. 220). Kessel's incus hook has, however, some advantages and might have been included. The conservative treatment of chronic suppuration of the middle ear receives the fullest study, and could scarcely be improved upon. Particular value attaches to Chapter XIX, in which the cytological and bacteriological examination of discharges from the ear is fully detailed. Although differences of opinion will exist as to the value of these examinations from the points of view of progress and treatment, there can be no question that the conscientious otologist will find it more and more necessary to study them. This is a subject in which Dr. Wingrave is a specialist in the specialty.

The pathogenesis of cholesteatoma is discussed in considerable detail, and the singular resemblance to normal skin presented by the matrix is beautifully illustrated. A considerable amount of space is occupied by the elaboration of reasons for not accepting Bezold's, Politzer's, and Habermann's view that an invasion of epithelium from the wall of the meatus through the perforation is the main element in the development of the condition (p. 280). Reference is made to Kirchner's belief that cholesteatoma may even invade the cancellous spaces of the adjacent bone, but Katz's refutation of Kirchner's interpretation of the appearances might well have been included. Kirchner's observation does not seem to have been confirmed by others, and in view of the importance of the question it would have been of interest to have Dr. Wingrave's own experience as to its occurrence. Dr. Milligan has made tuberculosis of the middle ear and temporal bone one of his special studies, and the chapter on this subject forms a valuable monograph. The chapter on ear affections in typhoid and other specific fevers is excellent but short—indeed, like Oliver, we would ask for more. Mastoid diseases are fully described, and several admirable illustrations help to elucidate the text. An interesting chapter on tinnitus as such is interjected between those on the diseases of the middle ear and those on the complications of middle-ear disease. It contains much suggestive information and does not err on the side of excessive optimism.

The complications of suppurative otitis give great scope for Dr. Milligan's well-known activity in their study. The anatomy receives considerable attention, and the comprehension of the pathological and clinical descriptions is thereby facilitated. In the clinical history and course of extra-dural abscess we note reference to its tendency to induce peripneumonia when situated round the lateral sinus and to involve the sixth nerve in Dorello's space (p. 372). The symptoms of meningitis are described and discussed under their respective names in the minutest detail, but their several perspectives in the bedside picture might be more distinctly brought out. Nothing of the slightest importance is, however, omitted. Epidemic cerebro-spinal meningitis can scarcely be called a complication of middle-ear disease as such, but it is, of course, rather as a cause of

internal ear disease that it is here of importance, and the account of it which is included is very useful. The chapter on abscess of the brain is complete and every statement is accurate. If the facts were marshalled so as to bring out their relative proportions more clearly (as might easily be done on revision for another edition) we could wish for no better or more helpful study of the subject. Sinus phlebitis and sinus thrombosis are described in an admirable chapter, in which the balance is clearly struck between excess of operative zeal and dangerous conservatism, realising the occurrence of a "purely localised abscess of the knee of the sinus" (p. 428). We presume that in the statement "it may also happen that the thrombosis is situated in the jugular bulb, in which case bleeding takes place from a non-occluded inferior petrosal sinus" the word "inferior" is a misprint for "superior" (p. 429). In the description of Grunert's operation for exposure of the jugular bulb we miss the special reference to the posterior belly of the digastric, the detachment of which we consider very helpful, though we presume it is included in the "soft structures drawn forcibly backwards and forwards" (p. 430). The chapter on the anatomy of the internal ear contains a digest, with important illustrations, of a paper by Cameron and Milligan, showing the mode of continuity of the auditory sense epithelium with the auditory nuclei of the hind brain, as elucidated by an investigation of the embryology of the auditory nerve in vertebrates. Upward degeneration as the result of toxins generated at the peripheral termination seems to be explicable by the direct continuity of the neuro-fibrillæ extending from the sense epithelium to the hind-brain, a principle of far-reaching importance (p. 449). A stage has been reached in which the *furor* excited by Bárány's monumental discoveries has made it difficult to consider calmly the diseases of the labyrinth as formerly analysed, but our authors give us a well-reasoned account, founded, as far as possible, on actual pathological observation, though necessarily supplemented in parts by clinical deduction. A section on "nerve-deafness" as such might have afforded some useful guidance in the methodical diagnosis of its causes. In regard to the surgical treatment of non-suppurative affections of the part, the authors, while frankly stating the objections, consider that there are cases in which the risk must be accepted by both patient and operator, where the patient, owing to his vertiginous symptoms, is unable to follow his occupation, or when from persistent tinnitus such an amount of mental depression is induced as to lead at times to the thought of suicide. The comparison between division of the auditory nerve and extirpation of the cochlea seems unquestionably in favour of the latter (p. 480). Suppuration of the labyrinth affords both authors considerable scope for their several and joint experiences. Caution is strongly inculcated in regard to embarkation on opening of the labyrinth. Various operations, such as Jansen's, Neumann's, Botey's, and Hinsberg's, are shortly but clearly described, while the methods practised by our countrymen, Dr. Milligan himself and Messrs. West and Scott, are given in considerable detail.

The chapter headed "Diseases of the Ear in Relation to General Medicine," which the authors have very judiciously confided to Dr. Purves Stewart, might perhaps better be styled "Lesions of the Nervous System Producing Auditory Disturbances," as it consists of a most instructive account of these conditions from the hand of a master. If specialists study it carefully and apply the knowledge derived from it, it will "from many an error free" them.

The shortness of the chapter on "Injuries of the Internal Ear" is a testimony to the eminently practical intentions of the authors, and the

one on "Deaf-mutism" possesses the same characteristic, but we hope it will be expanded in the next edition. The subject of simulated deafness is carried a little further than usual, though in the next edition the recently introduced "voice-raising" test will probably find a place.

The chapters on disease of the nose, naso-pharynx and pharynx contain an extraordinary amount of information in the space occupied, and some useful hints will be found in regard to operations on the nasal septum, as well as on enucleation of the tonsils.

It will be obvious at once that the present work is something more than the typical *rechauffé* of traditions and platitudes which are frequently served up as manuals or even text-books, and that we have here a carefully studied and reasoned consideration of almost every possible question in otology from the slightest up to the most serious.

The book has a solid foundation, and will stand every test so far as the value of the information conveyed in it is concerned. From what has been said above, it will be fairly obvious that if any alteration could be desired in the preparation of a new edition it would be in regard to the manner of presentation rather than to the matter presented. It presents all the internal evidence of industry, care and conscientiousness on the part of both authors, and we are sure that it will pass through many editions to commemorate the qualities with which we have credited them.

Dundas Grant.

The Albion Magazine. Edited by EVAN YELLON. No. 15, vol iv (New Series), January-March, 1912.

The Albion Magazine is as usual very readable. The editor continues his list of what he terms "Quacks the Deaf should Avoid." He discusses the various forms of micro-telephone aids, but we are pleased to see that he insists that some of the non-electrical aids are not unsightly in spite of the statements to the contrary made by advertisers of the electric ones. There is scope for both.

Dundas Grant.

BOOKS RECEIVED.

Diseases of the Ear, Nose and Throat--Medical and Surgical. By *Wendell Christopher Phillips*, M.D. Illustrated. Philadelphia: F. A. Davis Company. London: Stanley Phillips, 23, Creighton Road, Queen's Park, N.W.

Die Krankheiten der Nasenscheidewand und ihre Behandlung. By *Dr. Leo Katz*. With 8 coloured plates and 34 illustrations in the text. Würzburg: Curt Kabitsch (A. Stuber's Verlag), 1908. Price 6'80 marks.

Handbuch der speciellen Chirurgie des Ohres und der Oberen Luftwege. Herausgegeben von *Drs. L. Katz, H. Freysing, and P. Blumenfeld*. 1 Bd., 1 Hälfte, Lief 9. Würzburg: Verlag von Curt Kabitsch, 1911.

Direct Laryngoscopy, Bronchoscopy, and Œsophagoscopy. By *Dr. W. Brönings*. Translated and edited by *W. G. Howarth*, M.A., M.B., B.C.Camb., F.R.C.S.Eng. London: Baillière, Tindall & Cox, 1912.

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THE INTERNATIONAL COLLECTIVE INVESTIGATION
OF OZÆNA.

BY A. BROWN KELLY, D.Sc., M.D.

Surgeon for Diseases of the Throat and Nose, Victoria Infirmary, Glasgow.

THE credit of initiating the movement to organize an International Collective Investigation of Ozæna belongs to Prof. Arthur Alexander, of Berlin. Last summer he published an appeal—a translation of which is subjoined—addressed to the members of the Third International Laryngo-Rhinological Congress, setting forth reasons for such an investigation. The appeal came up for consideration at a meeting of the Congress and was favourably received. In the course of the discussion, Prof. Chiari raised the question as to what we were to understand by the term "ozæna" in its present connection. Prof. Alexander replied that simple or genuine ozæna—the disease characterised by developing slowly and leading to atrophy, crust-formation, and fætor—was alone referred to, while affections of the accessory cavities, syphilis and all other processes causing ulceration were to be excluded. A committee consisting of Profs. Alexander, Rosenberg and Grabower was appointed by the Congress to organize the investigation.

In the interval that has since elapsed considerable progress has

been made in the arrangements. At the request of the above Central Committee in Berlin, the following colleagues have promised to undertake the organization in their own countries: (1) Chiari (Austria), (2) Onodi (Hungary), (3) Siebenmann (Switzerland), (4) Gradenigo (Italy), (5) Compaired (Spain), (6) Mahu (France), (7) Broekhaert (Belgium), (8) Burger (Holland), (9) Brown Kelly (Great Britain and Colonies), (10) Mahler (Denmark), (11) Uchermann (Norway), (12) Holmgren (Sweden), (13) af Forselles (Finland), (14) Hellat (Russia), (15) Pieniaczek (Poland), (16) Costiniu (Roumania), (17) Taptas (Turkey), (18) Marcellos (Asia Minor), (19) Emil Mayer (U.S.A.).

In Germany the following amongst others have signified their intention of taking part in the investigation, and have had divisions of the country, cities, etc., assigned them: Hoffmann (Kingdom of Saxony), Krieg (Wurtemberg), Kollreuter (Baden), Schlegel (Brunswick), Romberg (Saxe-Meiningen), Müller (Saxe-Altenburg), Paulfranz (Saxe-Coburg), Auerbach (Lippe-Detmold), Mengel (Renss), Dittrich (Reuss), v. Eicken (Hesse), Suckstorff (Prov. Hanover), Hansberg (Westphalia), Ott (Lübeck), Winkler (Bremen), Zarniko (Hamburg), Manasse (Alsace and Lorraine), Kessner (Potsdam), Gerber (East Prussia), Behrendt (West Prussia), Lange (Pomerania), Kassel (Posen), Brieger (Silesia), Denker (Prussian Saxony), Friedrich (Schleswig-Holstein), Blumenfeld (Hesse-Nassau), Hopmann (Rhine provinces).

The British National Committee, consisting of Professor StClair Thomson, Dr. Logan Turner, and the writer, has been in communication with rhinologists throughout the United Kingdom and Colonies with regard to the carrying out of the investigation in their respective provinces and counties. A list of the names of those who purpose taking part in the work will be published at an early date.

Each organiser appointed is advised to form a small committee, including, if thought fit, representative laymen who can assist the objects of the investigation. The latter are made honorary members, relieved of all duty, and merely informed by report from time to time of the progress made.

The provincial or county committees thus constituted arrange if necessary for a further subdivision of the investigation by allocating the various districts, towns, hospitals, institutions, etc., falling within their sphere of supervision to additional workers.

The Central Committee in Berlin (A) sends instructions to the National Committees (B); the latter forward them to the Provincial

or County Committees (c) which transit them to those in charge of the various districts, institutions, etc. (D) ; D send their reports to C, C to B, and B to A. The Central Committee thus collects all reports, and publishes whatever is of general interest in the *Centralblatt für Laryngologie*.

It is hoped that the adoption of the scheme outlined will secure the co-operation of a large number of observers and excite a widespread interest in the investigation. Assistance will be welcomed from medical men who may not have received an invitation to take part in the work but who are desirous and capable of doing so, or who may have material bearing on the subject, *e. g.* medical officers of schools or orphanages, pathologists, members of the medical staffs of lying-in, children's, or fever hospitals.

Examinations are to be conducted in—(a) all schools, (b) institutions for blind and deaf mutes, (c) orphanages, (d) homes for incurables, (e) hospitals, (f) lunatic asylums, (g) sanatoria for consumptives, (h) crèches, (i) military barracks, (j) and all other institutions containing large numbers of persons.

Suggestions as to the best methods of carrying out the school examinations, of arranging for and performing necropsies on ozaena cases, and as to the points to be investigated in infants for the purpose of elucidating the onset of the disease, together with the various schedules which are now being drawn up, will be furnished in due course.

The recommendations of the Central Committee are offered rather as suggestions. The individual committees are left to act according to their discretion. Any procedure that might interfere with the carrying out of the investigation consistently must, of course, be avoided.

At the end of the collective investigation those who have taken part will be requested to furnish the Central Committee with a report of their results. They are at liberty, however, to publish elsewhere this report, or an account of any special points brought to light by the examinations.

The investigation will probably begin early in the autumn and be prosecuted for two years. The Central Committee will afterwards have a year for the preparation of its report, which it is hoped will be ready for the Fourth International Laryngo-Rhinological Congress to be held in Copenhagen in August, 1915.

Appeal for the Undertaking of an International Collective Investigation of Ozæna.¹

By PROFESSOR ARTHUR ALEXANDER (Berlin).

OZÆNA, at the present day, remains a mysterious disease, in spite of much laborious work by eminent investigators. Numerous hypotheses, instead of serving to elucidate, have led to a confusion of ideas which greatly hinders definite research. It becomes more and more evident that we lack an essential basis, and that certain fundamental questions must be solved before we can enter upon the further study of this difficult subject.

Our numerous bacteriological investigations have no foundation on which to rest until the infectiousness of ozæna is established.

The many ingenious attempts to represent ozæna as having the characters of an inherited constitutional disease are valueless as long as the hereditary transmissibility of ozæna is unproved.

Infections or hereditary? To this question laboratory research has vouchsafed no reply, nor has clinical observation of individual patients yielded important proof relative thereto.

A comprehensive question such as this is not to be settled by the examination of single patients, but by dealing with them collectively. We must study ozæna as a disease of the people.

Is ozæna so widely spread amongst the public and amongst nations as to merit this term?

To-day we are unable to advance any essential fact towards an unbiassed solution of this problem. What a serious error would arise should we wish to utilise the numbers in the report books of our out-patient department! What confusion if we were asked to express ourselves as to the numerical differences existing amongst various nations!

The question as to the frequency of ozæna can be reliably answered only by means of an international collective investigation uniformly carried out. Such an investigation is capable, both directly and indirectly, of shedding a flood of light on the subject.

Directly, not only by weight of numbers, which speak for themselves, but by presenting the question in a truer aspect after certain relations which may influence our opinion as to the real nature of the disease have been cleared up. Are there countries or districts of countries in which ozæna is altogether absent? Can certain centres be located from which the disease spreads? Do

¹ Third International Laryngo-Rhinological Congress, Berlin, 1911.

some races suffer specially from it? Are climatic conditions, public hygiene and such like responsible for the dissemination of the disease, or only for the severity with which it manifests itself? Is ozæna particularly common in goitrous regions as has been asserted? and if so, in all, or only in some? These and similar questions which hitherto have been only cursorily touched upon by writers will be settled in a reliable manner.

Indirectly, a collective investigation such as is proposed will be useful in yielding results which can be compared with those already available from other statistics.

The exceedingly careful statistical inquiries as to goitre, its frequency and relations to cretinism, will also throw light on the question of a probable connection between goitre and ozæna; it may also raise questions which may have an important bearing on our conception of the nature of ozæna. The statistics we possess on the diffusion of syphilis lead us to inquire as to whether there is no ozæna in countries free of syphilis; the answer to this question would also settle the old dispute as to the ætiological relations between the two diseases. Such statistical comparisons may also yield valuable information as to the relation of ozæna to tuberculosis, to the infectious diseases of childhood, and to affections of the accessory cavities of the nose.

The material placed at our disposal by the Collective Investigation may be utilised at the same time to determine the part played by heredity. An inquiry of this kind would be more to the point than any hitherto recorded. The fact of several cases of ozæna occurring in one family by no means proves the presence of hereditary conditions. A certain uniform principle underlies the inheritance of this disease, perhaps analogous to the well-marked conditions which in this respect are known to exist in hæmophilia, colour-blindness and night-blindness. Thus, patients become affected with ozæna although they never have been in contact with relatives suffering from the disease; further, a peculiar distribution of ozæna cases may be found in a family; and, again, healthy children may be exempt in spite of constantly living with ozænatous step-brothers and step-sisters. These examples are adduced to prove the influence of heredity. Everyone may occasionally meet with such cases, but only a collective investigation can furnish them in large and convincing numbers.

If one wishes to follow up the problem of heredity in ozæna an effort must be made to prepare a family table of every person affected with the disease. At present this is scarcely ever prac-

ticable in a manner free from objection, as the individual members of a family are usually widely scattered and often even in different countries. A carefully organized collective investigation would make it possible for those not at home to be examined by local doctors, so that, at least in important cases, complete and indisputable family tables could be obtained.

The collective investigation should, and must, be confined to these fundamental questions—occurrence, frequency, and heredity or infection. Other questions must be altogether avoided, especially such as can be adequately worked out on scanty material by individual investigators and those demanding more specialised knowledge for their solution. Consequently the collective investigation will not only enable us to fill up manifest gaps in our knowledge of the disease and provide a basis for further research, but will also arouse wider medical interest in this much neglected subject.

There are questions in the investigation of ozæna which the rhinologist can scarcely study on the material at his disposal; two groups of these may be briefly indicated.

One group deals with the pathology of ozæna during the earliest years of life. Does ozæna occur congenitally? What symptoms does it present in infancy? What becomes of noses which suffered from congenital syphilis or gonorrhœa? These and similar questions can be answered by anyone with the requisite patience even if his material be small, provided that such is at his disposal. In order to furnish this, the collective investigation and the co-operating agencies should have no difficulty in interesting on our behalf those who have material, more especially general practitioners and physicians for diseases of children.

The second group has to do with the pathological anatomy of the affection. Here all is still enshrouded in darkness. Our ignorance is due to the rarity of ozæna cases at necropsies, the unreliability of diagnosing ozæna in the dead body—a procedure to which numerous erroneous conclusions are traceable—and the incompleteness for the most part of the *post-mortem* reports hitherto published. We must have seen and had under observation while alive the cases that are examined *post-mortem*, we must know the clinical history and be in a position to compare the condition of the upper air-tract during life with that at the necropsy in order to fill up the report completely. Hospitals, and especially homes for incurables, should supply us with sufficient suitable material when medical superintendents are made cognisant of the importance of the questions under consideration. At the

same time the co-operation of the pathologist is necessary so that the *post-mortem* examination may be carried out in a manner suitable for our purposes. Those concerned with the organizing of the collective investigation might keep in view the elaboration of a scheme for a *post-mortem* schedule which would deal as far as possible with all controversial points.

Ozaena is an affection of adolescence. We shall therefore find the principal material gathered in schools, orphanages, and the army. Crèches, hospitals, homes for incurables, sanatoria for consumptives, etc., can also be made to serve our purpose. The permission of many authorities will be needed in order to be able to carry out the necessary examinations. This permission, as well as the requisite assistance, will be more easily obtained in all countries if the matter receive the support of so eminent a meeting of specialists as here present in Berlin at the Third International Congress of Laryngology and Rhinology. I therefore lay my proposal before this international assembly as that best able to judge of the suitability of such a collective investigation, and trust that it will meet with general acceptance.

REPORTS FOR THE YEARS 1910 AND 1911 FROM THE EAR AND THROAT DEPARTMENT OF THE ROYAL INFIRMARY, EDINBURGH.

Under the charge of A. LOGAN TURNER, M.D., F.R.C.S.E., F.R.S.E.

PART I.

AN ANALYSIS OF 123 CONSECUTIVE CASES IN WHICH OPERATIONS WERE PERFORMED FOR THE RELIEF OF THE MASTOID, LABYRINTHINE AND INTRA- CRANIAL COMPLICATIONS OF SUPPURATIVE OTITIS MEDIA.¹

BY J. S. FRASER, M.B., F.R.C.S.ED.,

Assistant Surgeon; and

J. K. MILNE DICKIE, M.B.,

House-Surgeon, Ear and Throat Department, Royal Infirmary, Edinburgh.

(Continued from p. 142.)

B 3. Four Successful Operations on the Inner Ear (4 cases).

Ages.—Nine, 11, 16 and 17 years respectively, the average age being 13·25.

¹ Read at the meeting of the Scottish Society of Otology and Laryngology held at the Royal Infirmary, Edinburgh, on November 25, 1911.

Side.—In three cases the left ear was affected, and in one the right.

Causation.—Original cause was measles in two; no statement in the others.

Duration of Discharge.—One case four months, two cases five years, and one case eight years.

Hearing and Vestibular Tests.—Total deafness in three cases; in one the ordinary voice was heard at 3 ft. Vestibular reaction absent in three cases, and in one abnormal.

Indications.—Aural polypi were present in all cases. Mastoid tenderness and swelling in two. Disturbance of balancing and nystagmus to sound side in all cases. In two the patient showed a tendency to fall to diseased side (others not mentioned). Vomiting was present in three cases, tinnitus in one case; in one case Kernig's sign was doubtful (absent in the others). In one case there was a slow pulse and subnormal temperature.

Operations.—Double vestibulotomy performed in three cases, while in one only the canals were opened.

Findings.—Cholesteatoma in one case; ossicles absent in two; erosion of external semi-circular canal in two, and of external and superior canals in one. Footplate of stapes absent in one case.

Bacteriology.—*B. coli* in one case apparently in pure culture; in another case *Streptococcus pyogenes*, diphtheroid bacilli, staphylococcus and *B. proteus* were present. In a third case *B. fusiformis*, spirochaetes, Gram + cocci and Gram - bacilli.

Progress.—One patient suffered from vomiting for two days after operation, and one from slight facial paresis, which passed off. Nystagmus to the sound side rapidly diminished after operation.

Result.—The four patients recovered, but only three reported. In these the suppuration had entirely ceased; the vestibular reaction on the operated side was found to be absent. Two of the patients were completely deaf, whereas in the remaining case the conversation voice could be heard at one yard (in this patient the canals alone were operated upon).

Statistics in Regard to Labyrinth Suppuration.

Excluding the 12 tubercular cases and 1 malignant case (to be reported later), the present paper deals with 110 patients, *i. e.* 32 acute and 78 chronic cases. Of the 32 acute cases, 2 died with purulent labyrinthitis (proved by microscope), and of the 9 deaths among the 78 chronic cases there were four in which labyrinthitis

was present. If we add the four successful cases of operation on the labyrinth, we find that out of this series of 110 cases there were 10 with labyrinth suppuration, *i.e.* 2 out of 32 acute, and 8 out of 78 chronic cases. Of these 10 labyrinth cases 1 (an acute case) was not operated on, while of the 9 remaining cases, all of which were operated on, 5 died and 4 recovered.

B. IV.—Two Cases of Successful Operation for Venous Thrombosis.

CASE 78 (*Ed. Med. Journ.*, July, 1910).—Mrs. D—, aged forty-one, had chronic (left) middle-ear suppuration for many years. Three weeks before admission had shivering attack and cough; case treated as influenza. Rigors with high temperature became frequent—one attack (March 2, 1910) lasted three minutes, and temperature reached 104° F. Four days later left tonsil became enlarged, and left side of neck painful. Rectal injection of anti-streptococcus serum given. March 8.—Copious discharge of pus from left ear, the flow being greatly increased by pressure over the left side of the neck; anti-streptococcus serum again given. March 11.—Patient seen for first time at Ear and Throat Department and admitted. Operation, March 11.—On removing the bandages pus streamed out of the left auditory meatus. The left internal jugular vein was ligatured just above the clavicle; the vein was difficult to recognise as the walls were dilated, thickened and softened. On tightening the lower ligature the vein tore through and some pus escaped, but no blood. There was no hemorrhage from the upper end of the vein, which was left open to act as a drain. The lining of the internal jugular vein appeared to be greyish-yellow and sloughy. The radical mastoid operation was next quickly performed. The tympanic cavity contained foul-smelling pus. The sigmoid sinus was opened and found to contain fluid blood. The wounds were not closed, and the meatal flap was not cut. Duration of operation was fifty-five minutes. The pulse was very feeble at the end of the operation. The pus from the jugular vein contained chiefly a bacillus of the "*coli*" group and a few "diphtheroid" bacilli. A culture from the patient's blood was negative.

Progress.—The neck wound remained very sloughy for five days, and a little pus continued to come from the upper end of the vein. The ear wound showed no reaction. There was no return of the rigors, but the temperature continued to be elevated for twelve days after operation. The patient was very weak, but took her food well. There were never any signs of pleurisy or pneumonia. The swelling of the left tonsil gradually subsided. Injections of *B. coli* vaccine were given on March 18 and March 23, 1910, and were on each occasion followed by a rise of temperature. Eleven days after the operation both wounds were granulating well. The neck wound was healed by April 5.

Second Operation, April 21, 1910.—A plastic flap was cut from the skin lining the external auditory meatus, and the mastoid incision was closed. The wound healed by first intention. All packing of the enlarged middle-ear spaces was discontinued on May 1, and at the present time the patient can hear *whispered speech at six feet with the left (operated) ear*. The outline of the inner wall of the middle ear is preserved, and the niches of the oval and round windows are clearly seen.

CASE 119.—J—A—, male, aged thirteen; seen in consultation with Dr. Hunter, of Falkirk. Has had left-sided otorrhœa since measles at the age of three years. Occasional pain in left ear. On April 22, 1911, patient played cricket all day, and at night complained of feeling ill. Three days later vomiting commenced,

and on April 27 the boy had a rigor in the early morning (bed shaken). Temperature 105° F., pulse 150. When seen at 7 p.m. on April 27 there was marked mastoid tenderness on left side, and the meatus contained foul-smelling pus and desquamated epithelium. Mastoid swelling absent. Patient was too ill for hearing tests.

Operation.—Cortex normal. Bone sclerosed. Antral cavity enlarged and filled with cholesteatoma. Anterior wall of sinus exposed and found to be greenish and sloughy. Radical operation completed. Ossicles absent. Sinus then exposed from region of bulb back to 1½ inches beyond the knee. Healthy wall reached at this latter point. Sinus slit open and found to contain decomposing clot. Free bleeding obtained from torcular end, which was plugged. Anterior wall of sinus removed. Only slight bleeding from lower end. Internal jugular vein ligatured below facial. Jugular collapsed. Facial vein tied off, and upper end of jugular slit up and stitched to skin. Owing to feeble condition of patient, the operation then concluded. Both wounds left open. April 28, 1911.—Dr. Hunter did not succeed in washing through the bulb. Boy had another rigor in the evening. April 29.—Bulb washed through by Dr. Hunter. Slight amount of pus removed. Patient bright and taking food well. May 2.—Temperature 100° F.; pulse 84. Bulb washed out daily. Free bleeding on removing packing from torcular end of sinus. May 8.—Neck wound very septic. Temperature varies between 101° and 102°; mastoid wound granulating. May 22.—Neck wound almost healed. Mastoid cavity lined by healthy granulations. September 26.—Plastic operation. Closure of retroauricular fistula.

B. 5.—Nine Fatal Cases following Chronic Suppurative Otitis Media.

CASE 14.—G. D.—, male, aged twenty-seven. Had discharge from left ear since infancy. Pain in left ear for two months. Very severe for one week. Rigor on night of admission, August 24, 1907.

Examination.—Inner wall of left tympanum showed pus and cholesteatoma. Marked mastoid tenderness. Foul tongue. Temperature 100.6° F., pulse 96.

August 25, 1907, *Operation.*—Antrum contained cholesteatoma and pus under great pressure (pure culture *B. proteus*). Sigmoid sinus exposed by disease in posterior wall of cavity and dura of middle fossa in roof. Mastoid tip removed as inner surface perforated. Sigmoid sinus soft and pulsating. Not opened. Wound not stitched. At 8 p.m. temperature rose to 101° F. Profuse sweating but no rigor. August 26, temperature 100.4° F., pulse 120. Patient noisy, tongue dry and brown. Urine loaded with albumen. 8 p.m., Temperature 103° F. August 27, *Second operation.* Internal jugular vein ligatured and divided. Sinus opened and found to contain brown clot. No pus. Anterior wall removed. Free bleeding obtained from torcular end, but only slight hemorrhage from bulb. August 28, Temperature normal; pulse 104. Vomiting; attempt to wash through bulb failed; at 8 p.m. temperature 102° F. Patient noisy; complains of backache; examination of chest negative. August 29, dulness and friction at both bases. Pulse feeble. Death.

Post-mortem.—Right pleura covered with organising purulent secretion. Septic infarcts in both lungs. Cavernous and other sinuses and jugular below ligature healthy.

CASE 36.—C. A.—, female, aged twenty. Suffered from deafness in and discharge from the left ear since infancy; never had any pain. The patient never

menstruated (mal-development of uterus), and had complete occlusion of the right choana (*Brit. Med. Journ.*, November 26, 1910).

Examination.—Left ear shows large perforation with slight purulent discharge. Instructions were given for the use of the intra-tympanic cannula. August 11th, 1908.—During intra-tympanic syringing the patient became giddy and suddenly fell to the left (diseased side); the nozzle was felt to grate on bone. Patient became very pale, vomited, and complained of intense giddiness; nystagmus to right. August 12, nausea continues. Temperature 102.6° F. at 8 p.m., pulse 114. *Operation* at 10.45 p.m. Antrum small and deep, but contained no pus; malleus and incus removed; small area of rough bone in roof of attic; oval window empty. Double vestibulotomy performed. August 13th.—Patient drowsy. Leucocytosis 14,000; cerebro-spinal fluid turbid (large Gram + diplo- and streptococci). August 14.—Neurologist advised exploration of temporo-sphenoidal lobe. *Second operation*, no pus evacuated. August 15.—Death.

Post-mortem.—General cerebro-spinal lepto-meningitis; no abscess of brain.

CASE 12.—J. S.—, aged seventeen months, had discharge from the right ear for ten months; swelling appeared behind the ear three days before admission.

Examination.—Right meatus full of pus; auricle displaced by subperiosteal abscess and oedema. Temperature 96.6° F., pulse 132.

October 22, 1908; *Operation.*—Superficial tissues oedematous; small subperiosteal abscess communicating with opening in cortex; pus in antrum (streptococci); roof of antrum and also posterior wall showed bone disease; sinus exposed at operation, apparently normal. Ossicles removed; mucosa of tympanum congested and swollen; Körner flap; incision closed. October 23.—Child sitting up in bed in the morning. At 1 p.m. pulse became very rapid and child cried a little. At 3 p.m. temperature rose to 100.6° F. and child vomited; at 4 p.m. vomiting; 4.30 p.m. death.

Post-mortem.—Numerous recent adhesions in right pleural cavity; thymus very large; mesenteric glands enlarged; heart muscle pale and flabby. Cloudy swelling of liver and kidneys. Oedema of brain but no meningitis. On microscopic section of the inner ear there was no sign of labyrinthitis. Was case one of acute sepsis or of lymphatism? Most probably the latter.

CASE 58.—I. McF.—, female, aged five, had discharge from left ear since measles three years ago; caught cold one week ago, and two days before admission a swelling formed behind the left ear. Child has been sleepless and had a convulsive attack during last two days; vomited three days ago but not since. April 9, 1909, *examination*: Mastoid tenderness and oedema; discharge from left ear; temperature 103° F. April 9, *Operation* (Dr. Turner).—Subperiosteal abscess; bone very soft; pus in cells; cholesteatoma in antrum; sigmoid sinus surrounded by pus (no growth on culture) and showed granulations on anterior wall. Dura of middle fossa exposed but found healthy. On lumbar puncture a small quantity of viscid fluid escaped; lymphocytes in films; *Staphylococcus albus* on culture (contamination). April 11.—Temperature rising; slight rigidity of neck and headache. Slight Kernig. Cerebro-spinal fluid clear on puncture. April 14.—No nystagmus nor vomiting; temperature subnormal. April 16.—Temperature normal since last report till to-day, when temperature 103.2° F.; pulse 120. Child crying and complaining of headache. Lies curled up on right side. Nystagmus to right. Kernig absent. Right vestibular reaction absent. April 18.—Vomiting; headache; temperature 101° F. April 22.—Temperature still elevated. *Second operation* (J. S. F.—); Bone separating posterior and middle fossae removed. Some pus between bone and dura. Pure streptococcus on culture. All three canals opened up. Double vestibulotomy. Free flow of cerebro-spinal

fluid obtained. April 23.—Temperature lower. Nystagmus to left (diseased side). April 25.—Temperature 104° F. Kernig's sign marked. Vomiting; incontinence of urine. Flow of cerebro-spinal fluid diminished. No aphasia; child can name objects correctly. April 26.—Vomiting. Dura of both fossæ bulging markedly. *Third operation*: Cerebellar dura incised and small intra-dural collection evacuated. Dura of middle fossa opened and foul-smelling abscess of temporo-sphenoidal lobe drained. Diphtheroid bacillus on culture. Tube inserted. April 28.—Patient very restless in spite of hypnotics. May 3, 1909.—Death.

Post-mortem.—General purulent cerebro-spinal meningitis (streptococcus on culture). Temporo-sphenoidal abscess draining well. Broncho-pneumonia and pleurisy present. Acute changes in internal organs.

CASE 61.—C. L.—, aged six, has had discharge from right ear and frequent attacks of pain since teething. A swelling formed behind the right ear six days ago. *Examination*.—Red fluctuating swelling over right mastoid. Greenish-yellow pus in meatus. Temperature 97° F. May 10, 1909, *Radical mastoid operation*.—Bone softened. Antrum large—contained foul pus and cholesteatoma (staphylococci, pneumococci, and *B. Proteus*). Posterior wound left open. May 13.—Wound shows no signs of healthy reaction; child drowsy. Temperature 103° F., pulse 160. No headache, nystagmus or vomiting. May 15.—*In statu quo*. White blood-cells 15,600. Polymorphs 92 per cent. May 16.—Temperature still raised. Cerebro-spinal fluid under pressure, but clear. May 17.—Left ear now discharging; temperature 99.4° F.; pulse 124. May 18.—Patient feels cold. Intense occipital headache. No vomiting or nystagmus. Temperature 104.4° F., pulse 154. May 19.—*Second operation*. Large extra-dural perisinus abscess evacuated (pus stinking). Wall of sinus appeared fairly healthy. Dura of cerebellum and middle fossa exposed. May 21.—Temperature swinging. Patient feels cold. *Third operation*.—Jugular ligatured and sinus slit up. Small amount of clot curetted out. Free bleeding from both ends. Bulb washed through. Patient collapsed after operation. Subcutaneous injection of saline. May 23.—Cerebro-spinal fluid clear, but under tension. Contains pneumococci and bacilli. May 25.—Dura of posterior fossa incised. Free escape of cerebro-spinal fluid. May 28.—Sloughing of abdominal wall over site of saline injection. June 3.—Kernig's sign noted for first time. No ocular paralysis. June 4.—Patient died. *Post-mortem*.—Right lateral sinus thrombosed to torcular. Walls gangrenous. Thrombus passes half-way along left lateral sinus; right superior petrosal sinus also thrombosed. Early general septic meningitis. Pyramic infarcts in lower lobe of right lung. Microscopic sections were made of both inner ears. Labyrinthitis not present.

CASE 76.—B. A.—, female, aged seventeen, had discharge from right ear for seven years. Severe pain in ear for two days prevented sleep. Nausea, but no vomiting. Left ear also discharges in spite of radical mastoid operation six years ago. *Examination*.—Meatus on both sides occluded by polypus. Whisper 1 foot (left). Right ear very deaf. No spontaneous nystagmus. Rotation in both directions produced no nystagmus. Cold syringing right ear produced no nystagmus (polypus present). February 10, 1910.—*Radical operation*, right ear. Cortex sclerosed. Antral mucosa polypoid. Ossicles absent; external canal eroded. On account of absence of nystagmus, giddiness and vomiting, decided not to open labyrinth. February 11.—Nystagmus to left (side of old operation). Headache present; no facial paralysis. February 13.—Pain in occiput and spine. Retraction of head. Limitation of movement of right eye. Facial paresis (right). Marked double Kernig. Cerebro-spinal fluid under tension, cloudy, contains polymorphs. *Second operation* 6 p.m.—Sinus and cerebellar dura exposed. Neumann's inner ear operation performed (right). Cerebellar dura incised; no pus. Sinus opened

accidentally, but hæmorrhage easily controlled; *Streptococcus pyogenes* obtained from pus from labyrinth. 12 p.m., Patient noisy. Occipital headache. Morphia injected.

February 14, 1910.—Temperature elevated, pulse rapid, large hernia cerebelli. February 15.—Death.

Post-mortem.—Convolutions flattened; basal meningitis. Pure *Streptococcus pyogenes*.

Note.—Microscopic sections of the right inner ear showed purulent labyrinthitis; the vestibule and canals had been drained by the labyrinth operation, but all coils of the cochlea contained pus. Microscopic sections of the left ear showed the method of healing after the old radical mastoid operation; the cavity was lined by squamous epithelium. Inner ear normal on left side.

CASE 82.—N. N.—, aged thirteen, has had foul discharge from left ear since infancy. Two months ago discharge ceased, but one week ago patient had pain in left ear and discharge recommenced. Child vomited twice yesterday and complained of intense headache; no definite rigor, but "cold feeling"; no giddiness. *Examination*, April 23, 1910.—Child pale and drowsy. General headache. Pulse 84; temperature 98.2° F. Kernig absent, but slight photophobia and pain on pressure over suboccipital region. No mastoid tenderness or œdema. No nystagmus. Left ear contains foul pus. Large perforation of membrane. Right mastoid shows retracted scar. Weber to left (worse ear). Rinne negative right ear; cerebro-spinal fluid under pressure and contains polymorphs. April 24.—Slight head-retraction. *Radical operation*.—Antrum small and deep; contained foul pus. Dura of middle and posterior fossæ exposed by operation. Extra-dural perisinus abscess. Posterior semicircular canal opened in removing bone. April 25.—Still slight retraction of head. Nystagmus downwards and to right. Kernig present. April 26.—Child very drowsy. White blood-cells 18,000, polymorphs 90 per cent. Occasional strabismus. Babinski double and well marked. Patient passes motions in bed. *Second operation*.—External superior and posterior canals opened up. Vestibule and cochlea also opened. Dura of cerebellar fossa incised. Patient died three and a half hours after second operation.

Post-mortem.—Localised collection of pus between tentorium and upper surface of cerebellum; *Streptococcus pneumoniae* on culture. No meningitis of posterior fossa. Microscopic sections of the right (non-operated) ear showed the retracted scar in the membrane adherent to the long process of the incus and head of the stapes.

CASE 98.—K. McD.—, male, aged thirteen (deaf-mute). Parents state that boy has always been deaf. Left ear has discharged for years. Pain in left ear two days. *Examination*.—Right membrane indrawn and adherent to inner wall. Left meatus shows granulations hiding membrane. Patient apparently hears higher tuning-forks. No spontaneous nystagmus. Vestibular response active on right side, slight on left. September 18, 1910, *radical mastoid operation* (left).—Antrum contained foul pus and cholesteatoma (*prolens* and *Streptococcus pyogenes*). Plate of bone covering sinus exposed and appeared abnormally white. Polypoid mucosa in oval window. September 19.—Patient had good night after operation, but at 11.30 a.m. to-day had rigor, with temperature of 107.8° F. Profuse sweating. Great pain behind left ear. *Second operation* half an hour after rigor. Left internal jugular ligatured. Bone covering sinus removed and perisinus abscess evacuated. Pus extended from near bulb to one inch behind knee. Sinus slit up and free flow of blood obtained from both ends. 6.30 p.m.—Patient still rather cyanosed. Pulse rather feeble. September 20.—Good night. Headache still present, slight nystagmus to right (sound side). Patient restless to-day. Pulse

irregular; cyanosis still present; marked double Kernig. Cerebro-spinal fluid under pressure, cloudy, stinking. On culture *Streptococcus pyogenes* and *B. proteus*. September 21.—Patient died.

Post-mortem.—Convulsions flattened. General purulent meningitis. Marked collection of pus in under surface of tentorium and outer aspect of right lobe of cerebellum.

Note.—Microscopic sections of both inner ears were shown as the patient was a deaf-mute; on the left side the cochlear canal was dilated, on the right collapsed; the membrana tectoria was attached to the outer wall of the cochlear canal.

CASE 118.—A. T.—, male, aged sixty-four. Had discharge from right ear for thirty years. Influenza one month ago, followed by headache. Thirteen days before admission, after a long walk, he complained of headache and vomited. Since that time he has got gradually worse—headache, vomiting, drowsiness. April 24, 1911.—Patient admitted semi-comatose; pupils moderate and equal; right knee-jerk increased; both discs show blurring of margin. Slight facial weakness on left side? Right ear contains cholesteatoma; functional examination impossible. Temperature 97° F., pulse 60. *Operation*, April 24.—Cortex normal; bone sclerosed; antrum full of cholesteatoma; dura of posterior fossa exposed by disease; dura of middle fossa exposed by operation—heathy but bulging slightly. Sigmoid sinus exposed by operation and found normal. Further area of posterior fossa exposed by opening the external and posterior canals. In view of findings at operation, it was decided to open the cerebellum; dura incised and sinus forceps inserted; stinking green slimy pus evacuated (Gram — bacilli and staphylococci). Cerebellar abscess lightly packed with gauze; posterior wound left open. April 25.—Patient not so well as expected; still slightly comatose; nystagmus to left (sound side); incomplete facial paralysis. Temperature 97° F., pulse 72. April 26.—Patient a little brighter, but still passes water in bed; pupils contracted. Wound dressed—no pus. April 27.—mental condition unsatisfactory. Pulse and temperature normal. April 28.—*In statu quo*. Temperature 97° F., pulse 64. May 1.—Optic neuritis present; patient quite unconscious. Left arm jerks continually; Cheyne-Stokes' respiration. Crucial incision of dura of middle fossa (no anæsthetic necessary). Temporo-sphenoid explored—no pus. May 2.—Coma deeper. Cerebro-spinal fluid clear, but under pressure. May 3.—Sudden cyanosis at 9.30 a.m. Pulse intermittent and irregular. Death at 10 a.m.

Post-mortem.—Slight exudate of lymph over cerebellum; interpeduncular arachnoid bulging with clear fluid; whole brain very soft. Second abscess cavity found in posterior part of right cerebellar lobe separated by $\frac{1}{4}$ in. of brain tissue from abscess which had been opened and drained.

Note.—The cerebellum was shown and also a microscopic section of the right inner ear (no labyrinthitis). The infection had evidently passed to the cerebellum between the posterior vertical canal and the sigmoid sinus.

c. Tubercular Diseases of the Ear (12 cases).

Age.—Varied from fifteen weeks to six years; average age seventeen months.

Side.—Left in seven, right in five cases.

Duration.—Varied from two weeks to three years; average eight months.

Examination.—Enlarged periotic glands or glandular abscess

in eleven of the twelve cases. In four there was a sinus over the mastoid. Facial paralysis present before operation in three. In one (fatal) case there was vomiting, photophobia and retraction of the head before operation.

Findings.—A sequestrum was found in six cases (in one instance part of the inner ear was included). The mastoid presented a worm-eaten appearance in the remaining six cases. It is noteworthy that in five the mastoid process contained inspissated pus of a putty-like consistency. In one case the sigmoid sinus was exposed by the disease. The radical mastoid operation was performed in all cases.

Bacteriology.—In only four cases was a microscopical search made for the tubercle bacillus, and in two of these the bacilli were discovered; inoculation experiments, however, were not carried out. In seven of the cases ordinary bacteriological methods showed the presence of the following organisms: *Staphylococcus aureus* 1, pneumococcus 1, streptococcus 1, *B. proteus* 1, mixed staphylococcus and streptococcus 1, mixed pneumococcus, staphylococcus and Gram—bacilli 1, Gram—diplococci and Gram—bacilli 1.

Complications.—Two children developed cervical abscess.

Result.—This is known in only seven cases—one death, one cured, and five still discharging. It is noteworthy that the one case in which cure was obtained was in a private patient. The child was operated upon very soon after the discharge became purulent, and the staphylococcus was the only organism found on culture. The parents of this child, after operation, removed it to the country, where it lived in the open-air. *It seems to be quite useless to operate upon these cases of tubercular ear disease, and then to return the children to the slums from which so many of them come.*

Fatal Case.

CASE 87.—J. N.—, male, aged nine months (twin), suffered from epilepsy at age of six weeks, and at this time periotic glands became enlarged. Discharge from right ear began at two months. Frequent vomiting. Operation on right ear at another hospital at age of three months. *Examination.*—Retraction of head. Photophobia; fistula behind right ear. Foul discharge right meatus. Right facial paralysis. Child emaciated. Mouth shows thrush. August 4, 1910.—*Operation.*—Large flat sequestrum removed from roof of middle-ear cavity. Outer wall of inner ear also removed as sequestrum. Remainder of inner ear appeared dead white, but not loose. August 10.—Child getting rapidly worse. More emaciated. Dead bone in inner wall of wound. Photophobia and vomiting. August 17.—Child died. *Post-mortem.*—Congestion of pia arachnoid and small pale miliary tubercles.

Note.—Microscopic sections of inner ear were shown; the outer wall of the

vestibule is absent, and the cavity is lined with pus; the cochlea shows granulation tissue and fistulae through promontory.

D. Malignant Disease of the Ear.

The following is the report of the only case of this nature in the list:

CASE 106.—Mrs. L.—, aged fifty, was first seen December 12, 1910. She stated that four months ago she first had pain and tinnitus in the right ear. She also noticed that her face was paralysed. The pain and tinnitus have continued and prevented sleep. Two weeks ago a watery discharge was noticed from the ear. Patient also complained of attacks of giddiness. *Examination*.—Patient mentally depressed. Complete right-sided facial paralysis. External meatus occupied by smooth red aural polypus. Slight mastoid tenderness. Schwabach lengthened. Rinne negative (right ear). Low tones not heard by right ear. Watch heard on right mastoid. Raised voice heard at six inches. Slight spontaneous nystagmus to left. Rotation tests showed some reduction of irritability of right vestibular apparatus. *Operation*.—December 26.—Cortex normal. Large hole in posterior wall of membranous meatus, so that the polypus is in contact with the bony meatus. Mastoid cells and antrum normal. Severe bleeding from the meatus, especially from facial spur. Radical operation performed. Malleus and incus absent. External canal and promontory healthy, but facial canal eroded. The polypus was apparently growing from the facial canal. Körner's flap cut. Pathological report upon polypus: Sarcoma of probable endothelial type growing from lymph-spaces. *Progress*.—Excessive blood-stained discharge from cavity. January 13, 1911.—Profuse granulations. Patient complained of giddiness. April 15.—Pain and giddiness have disappeared. Bleeding ceased. Facial paralysis *in statu quo*. August 12.—General health good; no loss of weight; cervical glands not enlarged. Operation cavity has filled up, but is covered by smooth epithelium; occasional pain. Facial paralysis *in statu quo*. With noise-apparatus in sound ear patient is quite deaf.

REMARKS.

In a paper dealing mainly with hospital cases it is impossible to give the result of operation in all instances; in only 80 out of 123 cases can the result be reported. It is almost unnecessary to call attention to the fact that many cases are sent to hospital far too late—when recovery is practically hopeless.

The mortality statistics in the cases recorded would, of course, have been better had patients suffering from purulent meningitis been allowed to die without giving them the slender chance afforded by operation; although no case of meningitis in the present series recovered, others have reported cures in case of undoubted purulent meningitis.

The writers would call attention to "bathing" as a cause of acute suppurative otitis media; such cases appear to be becoming more frequent and may be associated with the popularity of public

bathing establishments, in which the water must be highly septic at certain periods of the week.

The writers' experience of Bier's treatment in cases of otitis media and mastoiditis—though small—goes to confirm the prevailing view, viz. that the treatment is of little use.

Measles appears to be the most important cause of cases of suppurative otitis media (acute and chronic) which come to operation.

Bacteriology.—In 15 acute cases the infection was mono-organismal in 12 and "mixed" in 3; the streptococcus was the predominant organism. In cholesteatoma cases the streptococcus is frequently combined with the *B. proteus*.

It is probably unwise to remove enlarged tonsils and adenoids at the time when the mastoid operation is performed.

Cases of chronic purulent discharge from the ear, associated with good hearing, are often those in which a central perforation of the tympanic membrane is present; in these cases the purulent catarrh is frequently confined to the Eustachian tube and lower part of the tympanic cavity; such cases are not suitable for the modified radical operation and are better treated by lavage of the tube. The modified radical operation may be suited for cases of attic perforation with good hearing (with or without cholesteatoma), but in many cases the external wall of the attic should be removed.

The "non-packing" treatment is best after the radical operation; cases treated by this method show less tendency to the formation of excessive granulation-tissue, and have, of course, less pain during their dressings. They are also able to leave hospital much sooner than patients treated by the older method.

It is advisable to leave the cholesteatoma matrix *in situ* as it corresponds exactly with the lining membrane obtained after the radical operation.

The results obtained in regard to the hearing power after the radical operation go to show that this power is improved in the majority of cases, but, as a rule, the hearing, both before and after the operation, is so bad that it is of little practical use to the patient.

Occasional syringing is necessary after the radical operation to get rid of wax and epithelial debris.

Enlargement of the periotic glands frequently precedes the otorrhœa in cases of tubercular ear disease. Inspissated putty-like pus is often found in the mastoid in these cases, in addition to caries and necrosis of bone. It is almost useless to operate on

these patients and then to send them back to the slums. A sanatorium for the after-treatment of cases of tubercular bone disease is urgently needed.

Serous labyrinthitis followed operation in 2 out of 27 Schwartz operations, and in 3 out of 52 radical operations.

Cases of purulent labyrinthitis present a well-marked clinical picture: the patient suffers from giddiness and frequently from vomiting; when walking he tends to fall to the diseased side; nystagmus to the sound side is present. In bed the patient lies on the sound side and looks towards the diseased side.

In cases of labyrinthitis associated with meningitis it is probably best to freely remove the cochlea and so open up the internal meatus, thus providing a copious flow of cerebro-spinal fluid.

Extra-dural abscess was present in 3 of the 32 acute cases and in 8 of the 78 chronic cases: cases in which the dura was exposed by disease but in which no pus was found on further removal of the bone are *not* included.

There seems to be a special tendency for the collection of pus between the upper surface of the cerebellum and the lower surface of the tentorium cerebelli in cases of meningitis; is this a "back-water" in the intra-cranial lymph circulation?

In cases of left-sided temporo-sphenoidal abscess amnesia verbalis is not invariably present.

In cerebellar cases which do not improve greatly after one abscess has been drained it is important to remember the possibility of a second abscess; in the case recorded a counter-opening behind the sinus might have led to a favourable result.

The writers wish to express their gratitude to Dr. A. Logan Turner for his kindness in allowing them to bring before the Society the great majority of cases recorded; also to Dr. Shennan and the staff of the Pathological Department of the Royal Infirmary for the bacteriological reports.

THE TEACHING OF OTOTOLOGY AND LARYNGOLOGY IN ITALY.

BY FERDINANDO MASSEI,

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THE part which Italy has taken in the teaching of laryngology and otology is of not a little importance, and it is with pleasure I shall try to draw the outlines of its history in my country.

It is scarcely necessary to say that in this scientific development rhénology is included, as this branch was cultivated with the same vigour both by pure otologists and pure laryngologists; but above all, it is right to draw attention to the courageous trials made by simple private initiative in the first years of life of our speciality. Indeed, before the foundation of any official teaching, either in Italy or elsewhere, some eminent founders of otology and laryngology delivered lectures on these matters to the medical students or practitioners who followed the consultations of their private clinics; I may mention Gentile, Venturini, Sapolini, Longo, Labus, Giampietro as belonging to this period.

According to the priority in time to otology, the name and work of a late eminent Italian specialist comes first to my lips: I mean Professor Emilio De Rossi, who since 1866 practised otology in Genoa and wrote a treatise on diseases of the ear, and in the year 1870 delivered, in Rome, a course of interesting lectures on the subject. The year following he was entrusted by the Government with the teaching of otology in Rome. His desires, however, were unfulfilled; he returned to France, where he had previously passed some time, in order to pursue his favourite studies, but he was soon recalled, and a convenient appanage was accorded to the Chair of Rome. In the year 1881 he was promoted to the degree of Extraordinary Professor of Otology, and charged also with the teaching of laryngology. In the year 1879 Dr. Carlo Labus was named a privat-docent of laryngology in the University of Pavia, and in the year 1882 I was entrusted with the teaching of laryngology in the University of Naples after about ten years, during which I had delivered private courses on the same matter.

In a few words, the first official chairs in oto-laryngology in Italy were that of otology, in Rome, and the other—laryngology—in Naples. In Rome the teaching soon became mixed—oto-rhino-laryngology—while that in Naples remained a pure laryngological teaching, and the teaching of otology was confided to Professor Giampietro till 1891, when it passed into the hands of Professor Cozzolino, and remained separated till at his death (March, 1911).

In Italy there are more than eighteen universities, but oto-rhino-laryngology is taught only in eight (Catania, Genoa, Naples, Pavia, Pisa, Rome, Sassari, Turin). The high degree of ordinary professor was first obtained by De Rossi, and afterwards by me (Naples), by Ferreri (Rome), who succeeded to Professor De Rossi after 1901, the date of his death, and Gradenigo (Torino). Masini

(Genoa), and Grazzi (Pisa), are extraordinary, while the others are ordinary teachers of subjects.

Unhappily, new laws tend to limit this teaching only to official professors, in spite of the efforts and work of the pioneers of the speciality.

Among the eight universities in which courses of oto-rhino-laryngology are delivered, that of Rome alone possesses clinical wards; the section, directed by Professor Ferreri, is one of the finest in the clinic, and is greatly admired by foreign visitors.¹

In the others we make use of the out-patients, who apply in considerable numbers to our consultations. The absence of beds, however, deprives us of the opportunity of performing major operations, but the material for demonstration is very large, and we are able to perform all operations of minor importance, as well as œsophagoscopy, tracheoscopy, and bronchoscopy.

It must not be forgotten that in addition to the official teaching, the privat-docents deliver private courses, the prospectuses of which are examined and approved by the medical faculty.

In spite of the official character of the teaching, medical students are not obliged to follow the course, nor to pass an examination. Nevertheless several practitioners select oto-rhino-laryngology for their final examination, and if they desire they are permitted to pass a *free examination* which gives them no other right than a certificate.

As to the hospital appointments, some privat-docents are directors of special out-patient clinics, and the privilege of teaching the speciality may be acquired by examination, which consists in a printed dissertation, a lecture, and a practical demonstration. If the candidate can produce a sufficient number of publications the dissertation is not required (the commission is made up of five professors), and they are named "legally qualified privatdocents."

The length of the teaching course is from November to June; short vacancies are accorded at Christmas, Easter, and carnival time. The courses consist of lectures delivered three times a week for an hour, together with a practical demonstration.

As far as I am concerned, I confide to my assistants the teaching of the technique, the demonstration of anatomical and microscopical specimens, and I deliver the theoretical lectures, and the illustration of clinical cases as they come under my observation. Operations (those permitted upon out-patients) are daily performed before and after the lecture.

¹ Recently a clinic, with twenty-five beds, is founded in Catania.

The Roman clinic, however, is in much better condition, as it possesses several beds, wards for children, for segregation of patients, operating rooms, a room for radiography, a complete laboratory, wards for out-patients, and the administration of the hospital gives it considerable help and encouragement.

In the other seven universities, as has already been pointed out, the conditions are quite different, and perhaps even worse than those here in Naples. Nevertheless the scientific production in Italy is a very large one—much larger than appears from reports of the foreign papers.

The advancement of our speciality in Italy awaits at present its complete development, which cannot be reached until wards are set apart for our use in common hospitals or university clinics.

SOCIETIES' PROCEEDINGS.

ROYAL SOCIETY OF MEDICINE—OTOLOGICAL SECTION.

January 19, 1912.

DR. W. MILLIGAN, *President of the Section, in the Chair.*

Discussion on Factors which conduce to Success in the Treatment of Otogenic Brain Abscess.

I.—Sir V. HORSLEY drew attention, first of all, to the fact that very often a case of otitis media, especially if it has been treated by the mastoid operation, is regarded as being well when it is not really well. Regarding diagnosis, he believed that by blood-counts and opsonic tests the occurrence of abscess or meningitis could be anticipated. Stress was laid upon regular, careful neurological examination and upon more frequent bone operation.

The fundamental difficulty lay in differentiating between abscess and meningitis. For this task four or five cardinal symptoms were of value. First of all, the state of the pulse was of value; in meningitis its rate and force exhibited an irregularity not found in uncomplicated abscess. This was due to the involvement of the vagus roots in meningitis. Next, with reference to temperature, in uncomplicated brain abscess he considered low temperature to be an essential characteristic. The temperature might also prove a guide as to the locality of the abscess. The heat-regulating centres are in the Rolandic area, probably in the pre-central gyrus, and if the abscess is situated in the coronal plane through the Rolandic area, the temperature will rise on the opposite side of the

body. If the lesion lies anterior or posterior to that plane, *i. e.* in the frontal, temporal, or cerebellar regions, there will be no rise on the opposite side of the body. The presence of the sign may be indicative of the existence of multiple abscess, since the second abscess in such cases is usually situated in the parietal region.

The next symptom to be considered was motor paralysis or paresis. The pressure of temporal abscess rises vertically and induces a graded hemiplegia, first and chiefly of the face, then of the arm, of the trunk, and, lastly, of the leg. Sir Victor Horsley drew attention further to a sensory change. Of the two Rolandic gyri the posterior is considered to be more sensory in function than the anterior. When there is a pressure lesion of one hemisphere which bears upon the Rolandic area posterior to the coronal plane of the Rolandic fissure, then, although the motor paresis may be almost unnoticeable, there will be detectable a delicate loss of the sense of localisation of position—*i. e.* of the point touched—an impairment of "topognosis." In otogenic temporal lobe abscess the pressure bears first on the sensory motor area before pressing on the pyramidal fibres. But the pyramidal fibres take an oblique course so as to get to the thalamus. So that minute neurological examinations may reveal the existence of abscess at an early stage.

Turning to the reflexes, it was remarked that in meningitis the superficial reflexes soon disappear and are bilaterally affected; whereas in abscesses they do not disappear until late, and then unilaterally.

Changes in the abdominal reflex precede, and last longer than, changes in the knee-jerk.

Regarding optic neuritis, constant examination had shown the speaker that vascular changes preceded those of the nerve. Further, in abscess, over-filling of the retinal veins occurs on the ipsilateral side, while in meningitis the eye changes are bilateral. In addition to that, in meningitic cases the disc is highly oedematous and greatly swollen, while in abscess the oedema and swelling are quite moderate. (Optic neuritis at times occurs in uncomplicated petrous bone disease in children.)

The speaker concluded by narrating cases illustrative of the ipsilaterality of optic disc changes in cerebellar abscess, and of certain changes in the colour vision of the eye of the affected and of the sound side. Treatment he summed up as being a question of adequate drainage and vaccination.

II.—Mr. C. E. WEST dealt with pathological anatomy and treatment. Discussing the pathology, he expressed doubt as to whether abscess ever "bursts" by a breach of the stalk of the abscess into the meningeal spaces. The danger area lies towards the descending horn of the lateral ventricle, with which temporal abscess comes into a relationship more or less close according to its size. Infection of the ventricles occurs both by the passage of organisms through the tissue of the brain and by an actual breaking of the abscess into the ventricular cavity. Herein lies the danger of inserting drainage-tubes too deep into an abscess cavity.

In cerebellar abscess the relationship to the meninges is modified by the deep sulci of the cerebellum, and by the fact that the subarachnoid space does not penetrate the sulci. It is often difficult to decide how far an abscess is inter-lamellar, and how far it is truly in the cerebellar tissue. Secondary infection of the meninges is more common in cerebellar than in temporal lobe abscess, and it rapidly leads to general basal meningitis. Direct bursting of a cerebellar abscess into the ventricular spaces is not common, but the pressure of the abscess or a mild localised plastic meningitis may close the apertures of communication between the fourth

ventricle and the subaracnoid space, and by inducing internal hydrocephalus may cause death.

The prognosis in cerebellar abscess secondary to lateral sinus thrombosis is more favourable than in cerebellar abscess secondary to labyrinth disease, by reason of the accessibility of the former to operation and of its comparative remoteness from the vital medullary centres. The tendency to meningitis and to grave interference with the vital nerve-centres is less in temporo-sphenoidal abscess; on the other hand, in this situation there is more danger of ventricular infection. Operation is more likely to be effective in the temporo-sphenoidal lobe, because of its accessibility and facilities for drainage.

Regarding the limits of the abscess, in the majority of otitic abscesses there is no definite abscess-wall, and the surrounding brain tissue is softened and infected. When extensive it is difficult to adequately treat the condition; on the other hand, in chronic abscess with a thick abscess wall, obliteration of the cavity, even after prolonged drainage, is difficult to ensure.

The polymicrobic character of the pus renders treatment by sera or vaccines problematical.

Regarding treatment Mr. West expressed a preference in temporo-sphenoidal cases for a single route from below, and condemned a counter-opening as likely to endanger the meninges. In searching for pus he used an expanding trocar, so that when pus was found the instrument need not be moved until the drainage-tube was inserted through it. Drainage-tubes may be sutured *in situ* in order to prevent their expression by the brain. The difficulty of effectively draining large areas of necrotic brain tissue should be met by boldly removing bone, dura, and cortex over a wide area, so as to expose the infected portions freely. He advised prolonged drainage of brain abscess.

Discussion (with Exhibition of Cases).

The PRESIDENT (Dr. W. MILLIGAN) said he had had the good fortune to hear Sir Victor Horsley read a paper some time ago before the Pathological Society of Manchester, in which the question of the ipso-laterality of optic neuritis in brain abscess was thrashed out, and since that date the knowledge acquired had been of enormous advantage to him in cases of double otitis media in deciding upon which side an abscess was present, and when to interfere. The initial changes were first noticed on the nasal side of the disc. In the discussion he asked speakers to pay particular attention to the question of drainage. Besides the question of counter-drainage, which Mr. West had condemned, there was that of drainage of abscess in its acute phase, and the method of drainage in chronic abscess; also whether it was advisable, prior to operation, to undertake lumbar puncture so as to reduce intra-cranial tension.

Dr. URBAN PRITCHARD showed a case of double cerebral abscess of otogenic origin. The patient was one of the early cases of recovery from brain abscess. The man was now aged forty-nine, and in September, 1889, was admitted into King's College Hospital under the care of Sir Watson Cheyne and Dr. Pritchard.¹ There was a history of old-standing middle-ear suppuration, with recent severe pain in the left temporal region. On coming into the hospital his symptoms disappeared. There was a poly-

¹ See *Trans. Med. Soc. Lond.*, 1890, xiii, p. 154.

pus in the ear, which Dr. Pritchard removed, and the man seemed to do well. But a few days later there were marked cerebral symptoms, and it was decided to operate. In those days the idea was to go straight for the abscess, and Sir Watson Cheyne removed, by means of the trephine, a large circular piece of bone behind and above the auricle. Immediately after cutting through the dura mater he came upon an abscess in the temporo-sphenoidal lobe. After this the patient remained in a semi-conscious condition, and about three weeks later he was again operated upon, but no second abscess was found. The practice at that date was to put in a hollow needle and search for another abscess; this was now very properly condemned. A day or two afterwards Sir Watson Cheyne put in a pair of sinus forceps, which, on being opened, entered into the second abscess, which was fairly deep; a drainage-tube was introduced fully 2 in. long, and immediately afterwards the patient began to recover. For some years following the patient was subject to occasional epileptic fits, an aura in the shape of aphasia warning him of the approach of a fit. He had not now had a fit for five years, and the last was only a slight one on rising in the morning. Practically he had been perfectly well.

Dr. DUNDAS GRANT showed two cases: (1) *A Case of Temporo-sphenoidal Abscess*.¹—The abscess (1901) was near the surface and readily reached through the squamous bone. There was no definite capsule, so that it was probably of recent formation. Fœtid pus to the amount of about $\frac{1}{2}$ oz. escaped, and the finger introduced into the abscess cavity found the walls to be of soft consistency, collapsing completely upon the exploring finger. A thick india-rubber drainage-tube was introduced into the cavity and very gentle irrigation with boracic lotion was practised. The pus swarmed with bacilli which gave the staining characteristic of tubercle, but in spite of this very rapid closure took place, and the patient, though still subject to desquamation in the deeper part of the mastoid cavity, is free from all signs of recurrence of her cerebral abscess. The favourite factor in this case was probably the short duration of the abscess, and the absence of anything in the way of a rigid capsule to interfere with the obliteration.

(2) *A Case of Cerebellar Abscess secondary to Thrombo-phlebitis of the Bulb of the Jugular Vein: Ligature of Vein and Evacuation of Sinus and Bulb*.²—In this case exploration of the cerebellum (1905) from the outer surface was in the first instance negative, but a spontaneous evacuation took place through the anterior surface. This, however, was insufficient, and the discharge only began to decrease after a large counter-opening was made on the external surface, through which the finger was able to penetrate a well-marked abscess cavity. A drainage tube was inserted through the outer opening and the discharge speedily subsided. This case, so far as the cerebellar abscess was concerned, seemed to illustrate the advantage of a counter-opening.

Mr. PHILIP TURNER showed the following case: A. J.—, aged ten, was admitted to Guy's Hospital on March 21, 1910, with the following history: For three weeks he had suffered from headache, which was occasionally so severe that he cried out with the pain. During this time he had occasional attacks of vomiting and troublesome constipation. For a few days before admission he had been very drowsy. There had been a purulent discharge from the right ear for some time, but the cause and

¹ Shown at the Otological Society, February 3, 1902.

² Shown at the Otological Society, February 5, 1906.

duration of this were unknown. On admission the boy, though very drowsy, could be roused, and then complained of severe pain in the head. The pulse-rate was 52 and the temperature subnormal. The right pupil was dilated and fixed; there was ptosis of the right eyelid and some paresis of the left arm and leg. There was also double optic neuritis. An examination of the right ear showed pus in the meatus, and granulations in the position of the membrane. There was no swelling or tenderness over the mastoid. At the operation the mastoid cells were found to contain pus and granulation-tissue and there was pus in the antrum. A radical mastoid operation was quickly done, and it was then found that the tegmen tympani was carious and perforated. The middle fossa was then exposed by removing bone in an upward direction. The dura mater was tense, not pulsating, and its outer surface covered by granulations. Pus in the temporo-sphenoidal lobe was at once found by means of a large needle and exploring syringe. The dura mater and brain were incised and a large quantity of foul-smelling pus escaped. A drainage-tube was fixed in position and the lower part of the wound also drained. A bacteriological examination of the pus showed the presence of *Bacillus coli communis* and a diplococcus, the exact nature of which could not be determined. On the following day the boy was free from pain and the pressure symptoms had entirely disappeared. In the course of a few days he developed a hernia cerebri, the size of a small egg. The superficial part of this eventually sloughed away and the hernia then receded, while the wound granulated and healed, the boy being discharged on May 10. He attended out-patients for some time, feeling well, but having a slight purulent discharge from the external auditory meatus. He was lost sight of for some months but was again seen in September, 1911. There was then a large polypus projecting from the external auditory meatus for which he was re-admitted. This was attached to the posterior aspect of the meatus, and its removal by means of a snare was followed by a gush of cerebro-spinal fluid. This continued to escape; the discharge at first was profuse but subsequently diminished, and ceased at the end of three weeks. The boy was apparently now quite well. There was no discharge and the interior of the meatus showed no granulations. One remarkable fact was that he heard very well with the right ear. Before the first operation his mother stated that he was deaf, but when seen it was not possible to ascertain the extent of his deficiency of hearing.

Mr. ARTHUR CHEATLE showed seven specimens of chronic middle-ear suppuration, which caused, in five instances, temporo-sphenoidal abscess, and in two cerebellar abscess. In four specimens the mastoid cells were absent, the process being dense in one and diploëtic in three. In all the outer antral wall was dense. In three specimens the type could not be determined owing to operative interference. The specimens demonstrated that the types in which the mastoid cells were absent and the outer antral wall was dense were conducive not only to chronic middle-ear suppuration, but to intra-cranial complications—a fact which was also borne out by clinical experience.

Mr. WAGGETT brought forward, in association with Mr. E. D. Davis, a case of right temporo sphenoidal abscess, which was operated upon and recovered. Female, aged twenty-two, admitted for "headache and drowsiness." Two weeks before admission the patient was suddenly taken ill, with headache and vomiting. She was sent to a convalescent home. The vomiting ceased after the first day, but the headache became more severe. She had a discharge from the right ear which had continued since an attack of scarlet fever at the age of five. At the end of the fort-

night she returned to work, and on the morning of her return of admission to hospital she is stated to have fallen, and has been drowsy and more or less unconscious ever since. October 6, 1911: On admission patient is restless, moans, complains of pain in her head: she answers questions intelligently, but it is often necessary to repeat questions three or four times before receiving an answer. Respirations 24, irregular, and occasionally simulates Cheyne-Stokes' breathing; pulse 64, and irregular; temperature 98.8° F. Pupils: Unequal, right larger than left, react to light, photophobia. Nystagmus on looking to either side. Well-marked optic neuritis; examination by Mr. Treacher Collins. Swelling: Right optic disc, 5 D.; left optic disc, 4 D.; slight rigidity of neck. Paresis of the left side of the lower face, left arm and left leg. Onset of order of paresis not known; it is presumed the face was affected first. Tongue does not deviate; soft palate normal. Knee-jerks increased; ankle-clonus both sides; no Babinski. No superficial epigastric reflex on left. No tenderness of skull on percussion or palpation. Lumbar puncture: Fluid under pressure and contains a few lymphocytes. October 8: In the afternoon patient gave a sudden cry; relapsed to a similar condition to that on admission. October 10: Patient *in statu quo*. Right pupil dilated. Weakness of left side of face. Left arm and leg normal. Right ear: Right middle-ear suppuration; granulation inner wall of tympanum; dropping of posterior superior wall of tympanum; no local tenderness. Operation by Mr. Waggett: Right radical mastoid operation. Cholesteatomatous material, and pus in antrum. Tegmen removed; the dura was tense but pulsation was present. After incision of the dura, sinus forceps was introduced into the brain upwards, inwards and slightly forwards towards the bregma, and at a depth of 2 in., 2 oz. of foul *Bacillus coli*-smelling pus escaped. A rubber drainage-tube was stitched in and left in position for five days, a probe being passed along the tube every day. The length of the tube was 3 in. The tube was cut off flush with the edge of the wound. Bacteriology of pus: Staphylococci, streptococci and bacilli. Uninterrupted and rapid recovery. October 30: Optic neuritis—right optic disc, 1 D.; left optic disc, 3 D. No paresis. Nystagmus still present, but not marked. Mr. Waggett said it had been his practice to seek for pus with the median rhinoscopy speculum of Killian, but probably he had missed a certain number of abscesses. On a few occasions he had discovered abscess with his finger when he had failed with an instrument. In an experience of four cases he had never found any deleterious effect from passing his finger into the brain. In one case, that of a woman, the patient was practically dead on the operating table in the hands of another surgeon, who told him (the speaker) that he could do what he wished. About half her skull was necrosed—a much neglected case which had been sent into a hospital in a comatose condition. He passed his finger into her brain quite twenty times, and on the following morning she said she had not felt so well for months, and eventually she went out perfectly well. She had no abscess which he could find. In one case with symptoms of cerebellar abscess, he failed to find the abscess on two occasions. On the nineteenth day of the illness the patient became comatose, and he (Mr. Waggett), becoming desperate, passed his finger in and all over one lobe of the cerebellum. He found an abscess the size of half a walnut near the internal auditory meatus. The patient lived for eleven years.

Dr. A. LOGAN TURNER exhibited a table of sixty-eight cases which had been observed in the Ear and Throat Department of the Edinburgh Royal Infirmary during the past six years. His difficulties had consisted first in failure to appreciate properly symptoms and signs which should

have led him to operate earlier; and secondly, he had operated upon cases in which there were signs which suggested the presence of a condition which was not actually found. There were one or two diagnostic points which he had tried to work out in an analysis of these cases. He was sorry that the ophthalmoscopic appearances had not been worked out in detail, especially after what Sir Victor Horsley had said; but he had very fair notes on that head, and would look into the matter again. The table of incidence was interesting from the point of view that localised brain abscess evidently occurred much less frequently than did sinus thrombosis and meningitis. There were twenty-two cases of localised brain abscess, whereas sinus thrombosis meningitis occurred fifty-eight times. There was also a greater frequency of uncomplicated localised brain abscess, while sinus thrombosis and meningitis occurred relatively more frequently along with some other complication. This was in favour of more successful treatment in localised brain abscess. There were eleven cerebellar as opposed to eight temporo-sphenoidal abscesses. With regard to headache as a localising symptom, in eight cases of temporo-sphenoidal abscess, and in two cases in which a large extra-dural abscess was in the middle fossa, there was temporal headache in seven, frontal headache in two, and in one the situation was not stated; whereas in eleven cerebellar abscesses the headache was frontal in seven, vertical in one, occipital in one, and in one it was absent. In one the position was not stated. Of five cases of abscess in the left temporo-sphenoidal region, in four there was visual aphasia, inability of the patient to name objects, which was a useful sign in diagnosis. In eight cases of left cerebellar abscess that sign was not present. The other points investigated were vertigo and nystagmus. In the temporo-sphenoidal cases there was vertigo in one, no vertigo in eight. There were seven with no nystagmus, two with nystagmus, and in one no notes had been made. Of the two with nystagmus, however, there was inner ear disease in one, and in the other an extra-dural abscess was also present in the cerebellar fossa. The opposite was the case in cerebellar conditions, for of the eleven cerebellar cases there was vertigo in seven. Two patients were too ill for this to be ascertained; in one it was absent, and in one there was no note. Spontaneous nystagmus was observed in eight. With regard to the direction of the nystagmus, the nystagmus was in both directions in five of the cases, with a tendency for greater intensity towards the affected side. In two it was to the affected side only, and in one to the normal side. The incidence of the nystagmus varied in the cerebellar cases; sometimes on examination one found no nystagmus, at other times it was present. With regard to the class of case in which there were signs and symptoms suggesting a certain complication but in which another condition was found, he wished to refer to one case which suggested meningitis in the posterior fossa, but in which a cerebellar abscess really was present. There was excessive turbid cerebro-spinal fluid, an increase of albumen in the fluid, no reduction with Fehling's solution, and a large excess of polymorphonuclear cells. The temperature was high, the pulse-rate rapid, there was rigidity of the neck, double Kernig's sign, leucocytosis 22,000, a history of vertigo, and nystagmus in both directions. The case was treated for meningitis—*i. e.* a radical mastoid operation was done and a series of lumbar punctures carried out. Four days after admission the patient died suddenly. On *post-mortem* a large cerebellar abscess was found lying close to the surface of the lobe and leaking into the meningeal spaces through a small aperture. No meningitis could be detected

macroscopically. With regard to lumbar punctures, he was in the habit of performing that as an aid to diagnosis. In the case recorded it had proved rather a disadvantage than an aid to diagnosis; the knowledge gained by the procedure might not always be helpful.

Mr. HERBERT TILLEY said he would like to hear from Sir Victor Horsley what was the relative frequency of post-operative Jacksonian epilepsy. He had met with it in one case of cerebral abscess. That patient developed epilepsy after evacuation of a temporo-sphenoidal abscess, and his aura was a sensation of foul smell. Any suggestion from Sir Victor as to how such irritative lesion could have been produced would be gladly welcomed. With regard to drainage, he had always used a tube. He could not conceive anyone using a gauze drain for any wound, especially a cerebral one; an open pipe was required, not a wet plug. Anyone who considered the manner in which the wounds' exudate quickly soaked the gauze drain would appreciate this view.

Mr. HUGH JONES (Liverpool) said he did not know whether Sir Victor Horsley wished the Section to understand that there never was a rise of temperature from the beginning in cerebral abscess. He had had two or three acute cases in which there was a definite initial rise of temperature. Was that due to the concomitant condition or to the lesion of the brain? Many years ago he appealed unsuccessfully to several authorities to tell him what were the symptoms of latent brain abscess, as one often felt instinctively that abscess was present and there should be something to indicate it; there were clinical signs present, but we could not see them. Did Sir Victor Horsley wish all mastoid cases to be investigated neurologically? With regard to optic neuritis; the first case of brain abscess he had operated on (nineteen years ago) was a distinct case of the kind referred to (latent abscess). There was optic neuritis of the left eye, and the diagnosis was to some extent based upon the fact of ipso-laterality of the optic neuritis, though it was helped by the fact that the patient also had some aphasia. The patient had left temporo-sphenoidal abscess, which did very well. Drainage and searching for the abscess had been his greatest difficulty. At the Edinburgh meeting Mr. Ballance insisted on the use of the knife as a searcher, saying that one might feel round with a blunt instrument and yet miss an abscess, whereas a sharp knife would not only do less harm, but would be more certain to find the abscess and penetrate its wall. He (Mr. Jones) had found that the less one interfered with the abscess after it was drained the better. Drainage he found best carried out by putting in a double tube. But sometimes he found it difficult to know whether to shorten it or not. He, with Mr. West, had always favoured the natural route in acute cases and where a distinct track existed, but several speakers at Edinburgh said that that was unsurgical, especially where there was any doubt about the diagnosis; they said it should be a clean opening in an absolutely fresh surface, so as to avoid the possibility of infecting any other part of the brain. In cerebellar abscess he favoured the anterior route (internal to sigmoid sinus), with a secondary counter-opening.

Mr. HUNTER TOD said he was much interested in what Sir Victor Horsley had said about optic neuritis, because recently two such cases had been under his care, and the question was raised whether operation should be performed on account of a suppurative intra-cranial lesion, or whether the patient was recovering from meningitis, or internal ear inflammation. In one of the cases there had been acute middle-ear suppuration, and the patient had been sent to the hospital under the belief

that there might be a brain abscess. Before admittance there had been pyrexia, vomiting, and head-retraction, but the ear was now seen to be almost dry. Mr. Lister found, on examination, early optic neuritis, with marked œdema of the optic disc, amounting to $+5$ D. on the same side, and very slight optic neuritis on the other side. As there were no localising symptoms, and as the middle-ear suppuration had ceased, it was decided not to operate. In spite of the patient's general condition remaining normal, optic atrophy began to be manifest on the affected side. In the other case, one of chronic middle-ear suppuration, there was very marked œdema of the optic disc, followed rapidly by optic atrophy on the same side, so that within six weeks it seemed that the eyesight might eventually be lost; on the other side a similar condition, to a much less extent, was taking place. The mother of the patient refused operation, but the child, however, is now perfectly well with the exception of the eye changes. These cases raised the question as to whether one should operate, and to what extent, in middle-ear suppuration with optic neuritis, even although there was complete absence of all the intra-cranial symptoms. These cases also supported Sir Victor Horsley's view that the presence of marked œdema of the optic disc on the same side as the aural affection favoured the diagnosis of meningitis rather than an intra-cranial abscess. Mr. Tod remembered a case in which neglect to operate, owing to expectant treatment being carried out as there were no localising symptoms, resulted in the sudden death of the patient from the bursting of a cerebellar abscess. With regard to technique, he considered that the complete mastoid operation should first be performed, and then that only as much bone should be removed from the tegmen tympani and lowest portion of the temporal bone above, or from the mastoid behind, as would permit of sufficient exposure of the brain so as to insert a large drainage-tube. The cases in which he had been successful were those in which all the classical symptoms were present. In cerebellar abscess his results had been bad, as out of ten cases there were only two recoveries. In no case had recovery taken place in which drainage was attempted by the anterior route. He called attention to a condition, probably encephalitis, the symptoms of which closely simulated intra-cranial abscess. In this type of case all the symptoms of intra-cranial pressure occurred, usually very rapidly, and were accompanied by an irregular and slight pyrexia. Pyrexia was a bad sign, whether abscess was found or not. On incising the dura mater the brain substance projected from the wound, being usually very congested and friable. If the patients died, they did so within a few days from coma or from meningitis. With the above symptoms, if no abscess were found on exploring the brain, Mr. Tod urged that more bone should be removed and the brain substance incised in several directions. In some cases, as in Mr. Waggett's case, the results were most satisfactory, and complete recovery took place. In one case, which had all the signs of intra-cranial pressure together with visual amnesia, a temporo-sphenoidal abscess on the left side was diagnosed. No abscess was found, but definite encephalitis. Much bone was removed, with a resulting large hernia. Recovery took place slowly, with loss of visual amnesia. Three weeks after the operation all the symptoms returned. A fine pair of sinus forceps were then pushed into the brain, and an abscess found. Whether the abscess was the result of exploration or encephalitis is a matter of conjecture. The patient eventually recovered completely, and is now at work again. If it were known why patients died two or three weeks, or even later, after an apparently successful operation, the methods of

treatment might be improved from that point of view. Mr. Tod also asked Sir Victor Horsley what should be done for epilepsy developing after an operation. He had one such case, upon whom he had operated six years ago. He had removed a large area of bone, and at the first dressing the patient had an attack of typical Jacksonian epilepsy. This man had done very well, but he had recurrent attacks of Jacksonian epilepsy at long intervals.

Dr. A. BRONNER (Bradford) asked how one was to know what vaccine to use when the organisms were so varied; also what pus-searcher Sir Victor used. He now used the one recommended by Mr. West, but with a small abscess having a thick wall one was not so likely to open it up with that as with MacEwen's. He asked Mr. West what became of the capsule—was it absorbed? If there were many cocci present the capsule was thick, whereas if there were few it was thin. With regard to the eye symptoms most members would have read Sir Victor Horsley's researches on this matter, but eyes varied very much physiologically; one eye would show much venous congestion, and as there was also headache optic neuritis might be erroneously diagnosed, and the conclusion arrived at that there was brain abscess. But on ordering the use of glasses the symptoms might disappear in a short time. As to operation, he believed that usually not enough bone was removed. One should remove a large piece of bone outwards, so as to get drainage downwards and outwards. The advantage of making a second opening was that one could drain the cavity.

Mr. SYDNEY SCOTT said that in considering the factors conducing to successful treatment it was important to realise what the mortality of brain abscess was. Between October, 1895, and October, 1909, in St. Bartholomew's Hospital there had been 644 cases of intra-cranial infection: of these, 267 were directly traceable to the ear (after excluding such cases as tuberculous meningitis, in which there also happened to be otitis media, and other cases in which ear disease could not be regarded as a causal agent). Of the 267 cases of otogenous intra-cranial infections, in 100 there was leptomeningitis; in 55 lateral sinus thrombosis; in 42 brain abscess; in 34 extra-dural abscess, and the rest presented miscellaneous conditions. Taking the 42 cases of brain abscess, 30 were temporo-sphenoidal and 12 cerebellar. These figures were those of *post-mortems* only; they did not include patients who recovered after operation, or cases of supposed brain abscess in which no *post-mortem* examination was made. Mr. Scott had looked up the cases of brain abscess admitted during the fourteen years previous to 1911. Fifty-two patients were admitted, and only some ten cases were treated successfully. Dividing this time into two periods, during the first seven years twenty-six cases were admitted and twenty-four died—mortality, say, 95 per cent. One case of recovery was that of a cerebellar abscess which was irrigated. Another case of temporo-sphenoidal abscess, which recovered and lived (for two or three years, ultimately dying of a relapse, therefore included among the fatal cases), was tube-drained for sixty-two days. During the second period of seven years, again of twenty-six cases admitted eighteen died—mortality, say, 75 per cent. In the last three or four years there had been a further slight diminution in the mortality. Of factors which conduce to success he believed it would be generally admitted that specialisation was an important one. Secondly, by careful attention to the neurological survey, he believed that exploratory puncture of the brain for purely diagnostic purposes was less frequently called for. Thirdly, in puncturing the brain special care should be taken

to thoroughly disinfect the area exposed. Fourthly, he believed a free incision should be made in the dura mater, and that the puncture should be made with a narrow straight knife at right angles to the dura mater. Lastly, with respect to drainage, when an abscess was found, he was beginning to think that a free incision into the abscess should generally suffice, for from a consideration of cases which had recovered, he felt sure they recovered in several cases in spite of drainage-tubes, and in spite of gauze or other mechanical devices; in fact the brain (except in the case of a deep-seated or encapsuled abscess), after having been well incised, drained itself. But even with every attention and care brain abscess would always claim a high mortality on account of anatomical conditions, and the most practical way to lower that mortality was to diminish the incidence of the disease.

The PRESIDENT said he had often had great difficulty in diagnosing and treating intra-cranial abscess, especially from the point of view of maintaining successful drainage. In thanking Sir Victor Horsley and Mr. West for their contributions to the subject, he included in that expression appreciation of Dr. Logan Turner's remarks.

Sir VICTOR HORSLEY, in reply, said that the route to be followed depended on the case. He agreed with Mr. West that if there was destruction of the tegmen one should enlarge that opening. On the other hand, if there was not he was emphatically of the opposite opinion. He thought one should explore the parts which were being investigated as aseptically as possible, and therefore he used the trephine freely. With regard to pus-searching, he had himself invented a pus-searcher twenty years ago, and he still used his own instrument. Killian's was much the same thing, namely, two directors. The moment pus came out one slipped in the tube. With regard to drainage he did not believe in draining the brain with gauze, nor did he believe in leaving the brain to drain itself. He used a concentric tube. He took a tube of $1\frac{1}{2}$ cm. in diameter, split it down, and then pushed down it another tube 1 cm. in diameter. He sewed the split tube into the cavity by stitching it into the dura, and it was not moved for a long time. He agreed that drainage ought to be kept up. With regard to the question whether one was justified in doing this in the case of an acute abscess, or whether one should leave an acute abscess alone, he had never had sufficient courage to leave one alone after emptying it; possibly it might be due to a lack of enterprise. Obviously some could be left alone. He had always washed them out. Most infections had been mixed. The first influenzal cerebral otogenic abscess he had to deal with contained five organisms, and nothing was isolated which he could prove, by inoculation into animals, to be the cause of the disease. He agreed with Dr. Davis that hernia cerebri would get well. But this being associated with the infection of tissues with organisms, in his experience it got well more quickly if one painted it with pure carbolic acid. With regard to eye symptoms, he disagreed with the practice of leaving meningitis cases untreated. If a child came with optic neuritis, and went out of the hospital practically blind, it was a grave reflection upon the medical men concerned. He believed that all cases of otitis media with optic neuritis ought to have a very free operation done on the mastoid, and if the neuritis did not subside in a short time, the subdural space should be opened by a separate operation above. He had done this with excellent results. The moment the skull was opened the neuritis disappeared, and to allow it to go on to secondary atrophy was a very serious matter. With regard to lumbar puncture, he agreed with what Dr. Logan Turner said, that one could not always interpret

what one found by the test, but he did not agree that they were better without the knowledge, as he believed that all knowledge was useful. The President had thrown more light upon lumbar puncture in these conditions than had anyone else, and he regretted that the meeting had not heard Dr. Milligan upon it. In the same breath he both congratulated and condemned his friend Mr. Waggett, because although he had proved to demonstration that digital treatment of the brain was excellent for some people, he (Sir Victor) did not believe it was beneficial on the average. He fully agreed with those who said that although the brain should be exposed widely it should be touched as little as possible, and then only with sterilisable materials, and with as little bruising as possible. He had never seen a pus-searher fail to strike the pus; he had seen it strike against a thick sac, which sac he had removed *in toto* by pulling it out, not as a *dernier ressort*, but as a deliberate operative procedure.

Mr. Ton, in view of Sir Victor Horsley's criticism as to not operating in the cases of meningitis, asked the Chairman's permission to add that in the one case of chronic suppuration the mother refused operation. In the other case the symptoms were subsiding when the patient was admitted to the hospital, and by the time the optic atrophy was noticed the middle-ear inflammation had absolutely ceased, the perforation of the drum healed, the hearing and general condition being apparently normal. Further, the view of Mr. Lister and Dr. Henry Head confirmed the opinion that operation would be useless, as the mischief caused by the meningitis had already taken place.

Mr. West, in reply, said the pulse showed a certain particular quality in the majority of cases of brain abscess. It was a large, soft, and delayed pulse; it showed a long heaving wave, which could be compressed so that one could easily obliterate the pulsation, and it impressed one as being really slower than counting showed it to be. With regard to temperature, it would be agreed that in otitic brain abscess there were many cases in which the abscess was surrounded by much encephalitis, with raised temperature; but the pulse was slow relatively to the temperature. With regard to cerebellar abscess, there was a character of the knee-jerk which had not been dwelt upon. In one or two cases which he could recollect the patient was comatose, and the knee-jerk was extraordinary; it was really a spasm followed by clonus, the leg being held in the extended posture for some seconds, and was probably due to direct pressure on the pyramidal tract cutting off all control from the upper centres. Referring to Dr. Logan Turner's case of cerebellar abscess, probably it would be agreed that in many cases of cerebellar abscess lumbar puncture showed an excess of cerebro-spinal fluid, which was cloudy and crowded with polymorphonuclear leucocytes, but was sterile. Cerebellar abscess showed retraction of the neck also. He believed Dr. Logan Turner's case did not ooze and so produce the cloudy meningeal fluid, but oozed comparatively late as the result of the repeated withdrawal of the support of the thin outer wall of the cerebellar abscess by lumbar puncture. Years ago he had maintained that one might burst an abscess by diminishing the pressure which had been supporting its thin wall. Cases of late death after operation often occurred; in some of them one could not tell the cause of death—some had late infection of the ventricle, and others a spreading infection of the brain. In some cases it was a question of rash and rough manipulation of drainage-tubes, and that was why he raised the question about decalcified bone tubes which could be left in indefinitely without breaking up the surrounding brain. With a thick capsule, such as he showed, the cavity would, he

believed, never become obliterated. But the ordinary abscess-wall consisted of immature scar-tissue, and if the cavity could be obliterated, the whole area would become a mere scar in the brain substance.

PROCEEDINGS OF THE ROYAL SOCIETY OF MEDICINE—LARYNGOLOGICAL SECTION.

January 12, 1912.

MR. T. MARK HOVELL, *Vice-President of the Section, in the Chair.*

Case of Paralysis of the Left Vocal Cord.—Andrew Wylie, M.D.—Female, aged twenty-one, suffering from hoarseness of twelve months' duration. There is a complete paralysis of the left vocal cord, also a small adenoma in the thyroid gland which is said to have grown within the last twelve months; patient gives a vague history of injury to the neck. No sign of aneurysm or mediastinal growth, and no tuberculous or specific history. The patient complained of difficulty in breathing when lying down, but has been better since the adenoma was removed six weeks ago. Dr. Wingrave reports that—"It was enclosed in a firm fibrous capsule, which on cutting seemed to contain only blood partially coagulated and dark in colour, completely masking all other tissue. On washing away the blood a soft, reddish substance was seen, which proved to be an adenoma with very scanty and imperfectly developed thyroid tissue on its outer surface." The question is whether the injury to the neck affected the left recurrent laryngeal nerve.

Dr. JOHNSON HORNE, in support of the suggestion that an injury to the neck might cause paresis of the left recurrent laryngeal nerve, cited a case that came under his notice some years ago. The patient complained of thoracic symptoms, suggestive of mediastinal disease and probably aneurysm. He had fixation of the left vocal cord. Upon closer examination it was found that he had not only fixation but also a good deal of atrophy of the left vocal cord, and no thoracic physical signs of disease. In childhood an attempt had been made to strangle him; hence the laryngeal condition. External examination showed the larynx obviously atrophied on the left and displaced to the right side.

Mr. HERBERT TILLEY asked whether during the operation the deep regions of the neck were invaded. A surgeon of long experience told him that one did not usually damage the recurrent laryngeal nerve unless one saw it during the operation. Possibly the recurrent laryngeal might have been damaged in this case during the operation by pressure or by bruising; it was difficult to imagine that the normal inflammation following a clean operation would cause paralysis.

Dr. DAN MCKENZIE asked if Dr. Wylie ascribed the thyroid tumour also to the injury. The notes said it consisted largely of blood partially coagulated. Although there was also adenomatous tissue, it was not infrequent in cases of hæmorrhage into the substance of the gland for the blood to become encapsuled, and adenomatous tissue to grow from the sides of the capsule.

Mr. SOMERVILLE HASTINGS said that some eighteen months ago he

had shown a case of bilateral paralysis after operation on the thyroid gland. There was complete paralysis of both cords, and there seemed but little chance of recovery. She had, however, now recovered her voice.

Dr. KELSON asked when Dr. Wylie noticed the paralysis, as that fact might throw light on the pathology. He believed that after many operations on the thyroid there was a temporary paralysis. He had seen many, and they generally recovered.

Dr. WYLIE, in reply, said the first examination showed the same paralysis as was now present. She had received an injury through playing with her brother, who caught her roughly round the neck. The paralysis was not due to his operation; it was there long before he operated. The swelling in the neck appeared after the injury.

Papillomata on both Vocal Cords.—Andrew Wylie, M.D.—Female, aged forty, suffering from large papillomata on both vocal cords: a large one and two smaller ones on the right vocal cord, nearly filling the glottis. The patient has been under the exhibitor's care for six years and the growths have been removed completely eleven times by means of various forceps and snares, and cauterised on two different occasions. The exhibitor considers it may be advisable to open the larynx and curette the growths.

Mr. HERBERT TILLEY, with reference to opening the larynx and curetting the papillomata, said that laryngologists knew that even when the larynx was split, and the papillomata carefully removed, it did not follow that cure would result. There was a record of one child who had been thyrotomised seventeen times. Before thyrotomy was done in this case, he suggested that after removal of the papillomata by the direct method their bases should be touched with a pencil of carbonic acid snow. This produced good results in warts and other conditions of the kind. Or one might try a 20 per cent. solution of salicylic acid in absolute alcohol. Unless some such treatment were adopted, one could scarcely expect a cure, for, as in treating corns, it was of little use unless one got well down into the sub-epidermal tissue. He had now under his care a boy who (it was said) had had forty-seven operations on his larynx; during the last five years he had removed every three or four months many papillomata from the larynx, and yet they recurred. Last time he came to the hospital there was one papilloma on the tonsil and one on the posterior wall of the pharynx, which seemed to show that such growths were locally infective.

Dr. JOHNSON HORNE did not advise thyrotomy in this case. When one commenced to clear out papillomata from a larynx, at first they appeared to grow more rapidly. Experience taught him to go ahead and to effect repeated clearances, and not to wait for a material and definite recurrence. At what appeared to be the finish there usually remained one or two hidden beneath the edges of the anterior ends of the vocal cords. Upon asking the patient to phonate they came to the surface, and could be snipped off by double-cutting curette forceps. He had split the thyroid cartilage for the removal of papillomata in a child, aged twelve months. Upon laryngoscopic examination the basin of the larynx presented the appearance of being full to the brim with miniature bunches of red currants which hung over into the opening of the oesophagus and induced dysphagia. When first seen, the child was nearly moribund with broncho-pneumonia. A tracheotomy tube for croup had been worn for no small part of a short life. Dr. Horne opened the larynx, removed the papillomata, cauterised their bases,

closed the larynx, and left in the tracheotomy tube. Subsequently an intubation tube was inserted and the tracheotomy wound allowed to close. Dr. Horne had not heard of any recurrence of the growths.

Dr. DUNDAS GRANT asked what form of chemical caustic was employed. Many years ago he advocated salicylic acid applications, and he still had reason to believe in them.

Dr. DAN MCKENZIE said that dermatologists used carbonate of magnesia internally in cases of warts on the skin, with excellent results. He had tried it in one or two cases of papillomata of the larynx.

Mr. CLAYTON FOX said that numerous cases had been recorded in France cured by giving calcined magnesia internally.

The CHAIRMAN (Mr. Mark Hovell) said the treatment he had found best in papillomata of the larynx was removal, and then removal again immediately the growths reappeared, but not to wait for them to get large. Though in some cases there seemed to be a temporary increase due to the irritation produced by removal; yet if immediate removal were persisted in, the area would become smaller, and finally the growth would disappear. He had seen more than one case in which there was an absence of recurrence.

Dr. WYLIE, in reply, said he would certainly try the carbon dioxide snow, and would report the result.

? Pachydermia of the Right Vocal Cord.—Andrew Wylie, M.D.—Male, aged fifty-five, brass finisher by trade, suffering from hoarseness for six years, and has been under exhibitor's care for four years. During that time there has been little change in the condition of the larynx. On examination the right vocal cord moves very sluggishly and is completely covered by a hard, horny, white growth. A piece had been removed, and Dr. Wingrave could not find any malignant tendency. No enlarged glands, no history of syphilis, and although potassium iodide and mercury have been administered in large doses there has been no improvement. The patient declares he is perfectly well except for the hoarseness. No loss of weight, eats and sleeps well, and nothing to complain of but fatigue after speaking.

Mr. CLAYTON FOX did not consider that the case had the features of ordinary pachydermia, except that there was a mass of keratosis present. It was more like the condition described as frosted freshly mown grass. In view of the patient's age, he believed it would eventually be malignant.

Dr. JOBSON HORNE agreed that there was no evidence of pachydermia laryngis. He believed the frosted appearance on the edge of the cord was held by some to be pathognomonic of malignant disease, but he did not entirely accept that suggestion. Nevertheless, malignant disease should be borne in mind in this case.

Dr. PEGLER remarked that Dr. Scanes Spicer had shown a case which presented the frosted appearance mentioned. The man eventually underwent laryngo-fissure and died soon after of pneumonia. In the sections from that case, in the earlier stages, the characters of a squamous papilloma crested by horny cells could be distinguished, giving rise to the delicate white peaks seen with the laryngoscope. The later sections showed pearly cell-nests suspiciously invading the papillomatous tissue. Another case, of keratosis laryngis, but showing no malignancy, had been exhibited by Dr. Logan Turner, referred to in volume xiii of the old

Society. He remembered the series of microscopic preparations of Mr. Mark Hovell's notable case perfectly well, and had catalogued it in all its phases as squamous papilloma.

Mr. HERBERT TILLEY agreed as to the likelihood of malignancy, and would deal with it at once by radical measures. The base of the growth did not seem to move so freely as it ought to. He thought one was justified in splitting the larynx and thoroughly eradicating the lesion. He could not speak from any experience of this particular growth, as the condition was a rare one. Possibly the condition had only a low degree of malignancy.

Mr. MARK HOVELL said the condition was certainly rare, and he had only treated one case. The patient came scarcely able to breathe, as the growth was a very large one. He removed it by the intra-laryngeal method, and it came away easily. A few shreds were left, but they were removed on a subsequent occasion. He did not see the patient again for a year, and then he returned with the growth almost as large as before. The growth was again removed by the intra-laryngeal method, but it was more difficult this time, as it was more adherent. There was no recurrence, though he kept the patient under observation until he died, eight or ten years afterwards, from pneumonia. He regarded the condition as a slow form of malignancy, although in his case there was no recurrence. Remembering the success in that case, he thought removal by the intra-laryngeal method might be attempted, although the operator might be prepared to split the larynx and scrape out that side if there were any sign of recurrence.

Dr. WYLIE, in reply, agreed that the malignancy must be of low degree. As the man had had the condition six years, and there was no apparent change, it would be difficult to get him to agree to an external operation.

Swelling of the Right Ventricular Band and Vocal Cord.—W. H. Kelson, M.D.—A. L.—, warehouseman, aged forty; history of syphilis six years ago. Lungs normal; no tubercle bacilli found in sputum. Slight hoarseness began five months ago. The larynx is congested, particularly on the right side, where the ventricular band is seen to be swollen, partially eclipsing the view of the right cord, which also appears swollen. Iodide of potassium up to $\frac{1}{2}$ dr. three times a day has been given without effect.

Mr. HERBERT TILLEY asked if the man had had inunction of mercury, and if the Wassermann test had been carried out. If this was positive, he suggested that inunctions should be tried.

Dr. LIEVEN (Aix-la-Chapelle) thought the case was one of syphilis, and that energetic treatment with strong mercurial inunctions would be beneficial. They should be stronger than were usually given in England. He recommended 6 gm. to 8 gm. of blue ointment, as such diffuse swellings in the larynx disappeared only slowly. In any case a Wassermann test should be done and if this were positive two or three injections of salvarsan should be given. It ought to be combined with mercury, as thereby the chances of turning the positive reaction into a negative one were greater.

Dr. KELSON, in reply, said his view was that it was syphilitic, but the resistance to iodide introduced a slight doubt.

Atrophic Rhinitis, with Nasal Obstruction, in a Child, aged seven.—W. Jobson Horne, M.D.—The child had had discharge from

the nose for three or four years which had been yellow and offensive, with nasal obstruction. Two years ago an operation for the removal of adenoids was performed, but the result was not satisfactory. Externally the bridge of the nose is depressed. At the present time the post-nasal space is entirely free from any hypertrophy of adenoid tissue and from any other form of obstruction. The middle turbinated bodies are hypertrophied and obstructed with dried secretion and crusts. The inferior turbinated bodies are atrophied. The case is exhibited as illustrating a condition of nasal obstruction in childhood which might be attributed to adenoids, but which is really due, in the opinion of the exhibitor, to congenital specific disease.

Mr. CLAYTON FOX considered this case a suitable one for treatment by paraffin injection. During the past four years he had been treating patients by this method, using Gault's syringe and cold paraffin. He invariably injected the wax into the tissues covering the inferior turbinated body, but seized the opportunity of any available tissue; on many occasions he had injected into the tissues covering the septum and middle turbinals. All his cases had been either cured or relieved.

Dr. DAN MCKENZIE had tried paraffin in atrophic rhinitis, but found great difficulty in getting the paraffin to remain in the tissues on account of their friability.

Dr. PETERS had used the method with some success, particularly in cases of moderate severity. He passed the needle through the cartilage on the other side; he then found the paraffin was not so liable to escape. His efforts had been directed to the floor and the septum, and he thought such cases were most encouraging.

Hyperostosis Cranii or Leontiasis Ossea.—E. B. Waggett, M.B., and Edward D. Davis.—History: The patient complained of nasal obstruction, and of a discharge "at the back of the throat." No pain. He first noticed the swellings of the face at about the age of sixteen—*i. e.* five or six years ago. He has never been abroad. Present condition: A male, aged twenty-two, with symmetrical osseous swellings involving the nasal processes of the maxillæ, and extending on to the facial surfaces of the bodies of the maxillæ. The maxillary antra are opaque to transillumination, but the frontal sinuses are normal. Both sides of the nose are obstructed by the hard osseous swellings, which can both be felt and seen projecting into the nose. The infra-orbital margins are involved, and there is lachrymal obstruction on the right side, but in other respects the orbits are apparently normal. In addition, there is a diffuse smooth swelling of the body of the mandible to the right of the mental eminence, and surrounding the mental foramen. The teeth are carious, and there is considerable oral sepsis. The left ear is normal, but there is old otitis media on the right. The optic discs are normal. There are neither signs nor history of syphilis, but the Wassermann reaction is positive. Skiagrams show both maxillæ occupied by dense masses of bone.

Dr. JOBSON HORNE said the case was a very unusual one, and he regarded the title of hyperostosis cranii or leontiasis ossea as insufficiently concise, because the increased growth of bone appeared to be limited to the maxillæ. If it had involved the entire cranium one would have expected some obstruction of the auditory meatuses and in other parts. He believed the causation of the disease was a microbic infection. A similar condition was found in the tropics. Infection seemed to be through the nose.

Dr. KELSON said that in 1908 he showed a case which was practically the counterpart of this. The patient was a man, aged thirty. The condition did not exactly coincide with leontiasis, nor with the cases described as occurring on the Ivory Coast, in which the swellings occurred on either side of the nose. His patient came complaining of nasal obstruction, but there was no pain: he proceeded to cure his nasal obstruction, and, after turning back the mucous membrane, took a chisel to remove the bone—it was, however, of egg-shell consistency, and the operation was unexpectedly easy. The wound healed up readily, and the patient was out of the hospital in a few days. There was no history of syphilis.

Dr. LIEVEX thought this to be a case of syphilis, especially as the Wassermann reaction was positive.

Mr. EDWARD D. DAVIS, in reply, said he would give the patient iodide and mercury for a few months. If the Wassermann reaction then proved negative and the patient improved, it might be assumed that syphilis had caused the condition. In all the cases reported in English syphilis was denied, with the exception of one, which was reported by Sir Anthony Bowlby. He referred members to an article by Sir Victor Horsley in the *Practitioner* for 1905. Sir Victor operated upon five of these cases, and the growths were considered to be inflammatory. There was a thickened periosteum, and Sir Victor said that the new bone was osteoplastic and osteoclastic.

Tuberculosis of the Retropharyngeal Lymphatic Glands.—**Dan McKenzie, M.D.**—*Case 1:* A little girl, aged six, came to hospital on June 22, 1910. On examination, a soft fluctuating swelling was discovered in the posterior pharyngeal wall to the left of the middle line. Some hard, enlarged glands could be felt in the carotid region. The patient was also suffering from adenoids. Under chloroform the retropharyngeal swelling was incised, and about $\frac{1}{2}$ oz. of pus evacuated. In October, 1910, the adenoids were removed. In December, 1910, the swelling in the posterior pharyngeal wall reappeared. At first this swelling was firm and fleshy, and seemed to be solid, but when the patient was anaesthetised fluctuation could be made out. The abscess was freely opened on May 8, 1911, and its walls thoroughly curetted. Healing followed in about a fortnight. There is a history of tuberculosis both on the maternal and on the paternal side of the family. Both the von Pirquet and the tuberculin injection test gave a marked reaction.

Case 2.—Also a little girl, aged five. After an attack of scarlet fever (with otorrhoea, which dried up in four months) the mother noticed a swelling in the child's neck in April, 1911. On examination the swelling was found to be a chronic retropharyngeal abscess, which was pointing in the neck behind the right sterno-mastoid. In June the abscess was opened at this place, and we found it easy to pass the finger up into the retropharyngeal sub-aponeurotic space. After evacuation the walls were lightly curetted, iodoform glycerine was injected, and the wound was sutured. Healing ensued.

The cases illustrate two types of the same disease—namely, tuberculosis of the retropharyngeal lymphatic glands.

Mr. CLAYTON FOX said these cases were interesting from the fact that generally only acute abscesses were found in connection with Gillette's glands. These structures were supposed to disappear at about the third or fourth year. Possibly in these cases the glands were infected with tubercle before involution was complete. But it was conceivable that suppuration arose primarily in the latero-pharyngeal glands, and that the

pus burrowed through Charpy's lateral aponeurosis into the retro-pharyngeal space.

Swelling in Region of Left Tonsil.—**Frank Rose, F.R.C.S.**—Female, aged sixty-one. Two months ago a crust stuck in her left tonsil. She removed the crust with her finger. Since then her throat has been sore, causing discomfort when swallowing. There is a large smooth swelling in the situation of the left tonsil occupying the entire cavity of the oro-pharynx and extending below to the level of the epiglottis. There is a deep cleft in the anterior surface, and its anterior inferior surface is ulcerated. A firm swelling can be felt externally in the neck. Opinions are invited as to the nature and treatment of the swelling.

Mr. HERBERT TILLEY said probably no one would like to give a very positive opinion about this case, because it was unlikely that any member had seen anything exactly like it before. One could not be sure it was not a primary syphilitic lesion. She said that two months ago a crust stuck in her left tonsil, but the tonsil might have been contaminated with the syphilitic poison by this means. There were enlarged glands in the neck. The question of syphilis should be investigated before any drastic operative procedure was adopted. If syphilis could be excluded there was nothing for it but a major operation.

Dr. LIEVEN agreed with Mr. Tilley that this might be a case of primary syphilis of the tonsil. But as the clinical signs of tonsillar chancre were in a great many cases very indefinite he could not give a definite diagnosis. In early primaries the Wassermann reaction was invariably negative, and therefore one should adopt the old method of waiting until the appearance of secondary symptoms or a positive Wassermann, in this case more especially, as if an operation were to be performed it would necessarily have to be very extensive.

Dr. DUNDAS GRANT said that the cases of primary specific infection of the tonsil which he had seen had not presented the same appearance. They looked more diphtheritic, and there was not much enlargement of the tonsil, especially when compared with the enlargement of the glands. In the present case the external glands were very small compared with the enormous size of the tonsil. To him it looked more like localised lymphadenoma or lympho-sarcoma.

Mr. ROSE, in reply, said his opinion when he first saw the case was that it was a growth, and that was still his view. He regarded it as malignant. The question was whether it was lympho-sarcoma, or one of the endotheliomata which sometimes occurred on the lateral wall of the pharynx. He had never seen an appearance of the pharynx like this one. If it was a malignant growth he would not hope much from operation. The swelling was firm, and did not give the idea of œdema; it was of the consistency of a soft fibroma. The finger could be passed between it and the posterior pharyngeal wall. It did not invade that wall at all.

Case of Tuberculous Laryngitis; Acute Herpetoid Condition.—**J. Dundas Grant, M.D.**—When first seen on January 2 the patient complained of intense pain, especially when swallowing, for three days, but for two months previously he had experienced slight pain. In the larynx was seen infiltration of the left half of the epiglottis and ary-epiglottic fold, with small herpetic spots. The right half of the larynx was very slightly infiltrated, but the vocal cords were normal. Pulmonary physical signs of tuberculosis are present, and tubercle bacilli in the sputum.

He was ordered to suck ice, and to inhale, by means of Leduc's tube, a powder consisting of equal parts of anæsthesin and orthoform. A week later the pain had considerably diminished, and several shallow lenticular ulcers with white edges were seen on the infiltrated regions on the left half of the larynx.

Dr. DUNDAS GRANT added that the question was whether it was a case of localised miliary tuberculosis, or a herpetic condition on top of a tuberculous infiltration. It was confined to one half of the larynx, and when he saw the case nine days ago there was acute inflammation, with appearances on the surface which resembled blisters. The question was whether they were herpetic. If they were so they might shrivel up. He would report on the case later.

PROCEEDINGS OF THE SOCIETY OF GERMAN LARYNGOLOGISTS.

Eighteenth Annual Meeting at Frankfurt-a-M. on May 31 and June 1, 1911.

Condensed Report by the Secretary, Dr. RICH. HOFFMANN (Dresden).

President—Prof. KILLIAN (Berlin).

May 31.

Demonstration of a Series of Stereoscopic Photographs, bearing upon the Development of the Nose and Naso-pharyngeal Tonsil during Embryonic Life. Also a large Model of the Larynx for Teaching Purposes, with Mirror: Preparations in Wax of Interesting Conditions; Coloured Diapositive: New Examination Lamp: Speculum for Dilating the Hypopharynx; and an Instrument for taking Measurements in the Trachea and Bronchi.—**Killian** (Berlin).

June 1.

Research bearing upon Important Questions in the Domain of Tuberculosis.—**E. Rumpf** (Ebersteinburg).—In his introductory remarks Rumpf laid stress on the frequency of early laryngeal tuberculosis among patients in sanatoria, and the favourable influence on such cases of complete silence, rest, and general tonic treatment. Moreover, he had often observed a much more marked and rapid improvement of the lung condition after the establishment of free nasal breathing.

Rumpf then referred to the work of Römer, of Marburg, who assumes that when once a tuberculous infection has occurred, a protection is conferred against a new tuberculous infection. This has been shown experimentally by the results of secondary infection in apes and other animals, and is further suggested by the extraordinary frequency of tuberculous infection in man, and especially by the fact that among the civilised races almost every individual after childhood must be regarded as infected.

In favour of the view that the tuberculous individual enjoys

immunity against further tuberculous infection, Römer puts forward many plausible arguments apart from the analogy with the results of experiments on animals. A fresh tuberculous infection is not acquired in sanatoria and consumption hospitals, nor by tuberculous children from their elder brothers or sisters who are severely infected, nor in the married state, nor in occupations which entail especial exposure to tuberculous infection; relative infrequency of a secondary laryngeal and intestinal tuberculosis in comparison with the great opportunity for infection; harmlessness of subcutaneous infections with virulent tubercle bacilli in tuberculous (because adult) patients (Baumgarten and Klemperer); immunity of persons with pulmonary tuberculosis against the use of tuberculous cow's milk (as established by the Board of Public Health); frequency of the presence of tubercle bacilli in the blood of consumptives (*vide infra*) without any appreciable effect. The immunity of man against reinfection is, like all immunity, relative; too severe a re-infection leads to pulmonary consumption. Re-infections which lead to phthisis arise, not from without (*v. s.*), but from within. The possibility of the occurrence of such severe re-infections depends upon the severity of the infection which took place in childhood. For, as a matter of experience, it is just those persons who no doubt as children, especially in the family, were exposed to severe tuberculous infection, that tend to contract phthisis (such cases being formerly wrongly regarded as hereditary). Prophylaxis of consumption must, therefore, above all aim at the prevention of severe infections in childhood.

Rumpf then proceeds to deal with the reports of the discussions of the International Tuberculosis Congresses so far as they are concerned with the question of the points of entrance of the infection and the spread of tubercle bacilli in the human body. While formerly the great majority of observers believed in the preponderance of infection by inhalation, it must be admitted after the discussions at the Hague and in Vienna that alimentary or deglutition tuberculosis is, in man, especially during childhood, by far more frequent.

A tendency to give up the inhalation hypothesis is noticeable inasmuch as more observers declare themselves in favour of the view of the tuberculous infection of the lungs by way of the blood-stream, as Orth did twenty years ago, and as now do Ribbert and others still more decidedly, and for some years Aufrecht most vigorously of all. The latter says, "The tubercle bacilli pass in all cases by way of the lymph-gland into the blood and thence to the organs affected, not by inhalation into the lungs. The lungs are infected only from the cervical and bronchial glands which are previously diseased. Pulmonary tuberculosis in man originates only from the diseased walls of the smallest vessels; the lymph-glands are the barrier against the inundation with tubercle bacilli."

Rumpf himself, in Vienna, drew attention to the fact that a remarkable number of observers, while in other respects of widely different views, all agree as to the importance of the pharynx and especially of the pharyngeal tonsil as a point of entrance of infection. He recalls the work of Hugo Beckmann, who regarded as of primary importance in combating tuberculosis the closure of this main entrance-way of infection by the complete possible removal of the pharyngeal tonsil, and, if required, treatment of the nose, the palatal tonsils, and the cervical glands. Of recent experimental work Rumpf mentions that of Baumeister, which was intended to throw light upon the tendency to infection of the apices. Baumeister fixed a loose wire noose round the first pair of

ribs of young growing rabbits. When the animals were then infected with tubercle bacilli, there developed immediately an isolated apical tuberculosis as the growing lungs became engaged in the too narrow "costal ring" (Freund); and, moreover, an isolated apical infection could never be produced through the air-way, but only by way of the blood-stream (infection from an inguinal gland).

Rumpf then draws attention to the analogy with tuberculosis of the female genital organs, where there exists a canal lined with mucous membrane having a wide communication with the exterior and therefore exposed to infection by this path. Jung, however, at the last Gynaecological Congress, says: "By far the greatest number of cases of tuberculosis of the female genital organs originate by secondary infection from the blood-stream."

In conclusion Rumpf calls to mind that the more recent researches have shown that tubercle bacilli circulate in the blood much more frequently than was formerly supposed, not only in miliary tuberculosis, but even in chronic tuberculosis; according to Schmitter in 32 per cent., Bippmann in 44 per cent., Rosenberger and the Japanese, Kurashize, in 100 per cent.

The latter examined the carefully centrifugalised blood, treated with glacial acetic acid and antiformin, of 155 patients with lung disease, and found tubercle bacilli in the blood-stream of as many as 59 per cent. of healthy medical men and nurses, several of whom, of course, later suffered from pleurisy or had an initial hæmoptysis. In several instances he was able by inoculation of guinea-pigs to prove beyond question that the acid-fast rods were, in fact, tubercle bacilli. In his opinion a poor condition of health and a lowering of the resistance, as well as the degree of vitality and virulence of the bacillus, are of essential importance in regard to the outbreak of a disseminated tuberculosis. Even in the very earliest stages of tuberculosis there is an apparently continuous circulation of tubercle bacilli in the blood. Tuberculous disease, according to Kurashize, consists essentially of a primary bacillæmia, or at least of a disease generalised from the beginning, and the scattered foci, as, for example, in the lungs, represent merely secondary changes in *locis minoris resistentie*.

BRIEGER (Breslau): Tuberculosis of the pharyngeal tonsil is far more often secondary (to latent lung tuberculosis, etc.) than primary. It would be of value to have more exact information as to the frequency with which sanatorium treatment alone exerts a favourable influence on laryngeal tuberculosis.

BOENNINGHAUS (Breslau): A negative result in examining the naso-pharyngeal tonsil for tuberculosis is no proof that it has not been the channel of infection. The bacillus need leave no trace of disease at its place of entry.

RUMPF (in reply) said that the view just expressed was constantly gaining wider acceptance. Tuberculosis of the pharyngeal tonsil can certainly also arise secondarily by way of the blood-stream. Spontaneous healing of laryngeal tuberculosis in sanatoria is well established, and the percentage of permanent cures has been accurately ascertained. Laryngeal tuberculosis is given in the institutions the most thorough attention. (Dissent.) It is, however, the fact that laryngeal tuberculosis is usually secondary to pulmonary disease.

Analysis of Artificial Vowel Sounds.—Gutzmann (Berlin).—The artificial vowels are produced by conveying into the mouth the sound of a membranous reed-pipe. When the cavity of the mouth is

shaped as during the natural production of the vowel, the artificial vowels sound is obtained in a clear and very characteristic manner. The speaker had made photographic records of a number of these artificial vowel sounds, and had systematically analysed the tone-photographs thus obtained. The artificial vowels were found to show the same areas of augmentation as the natural. Especially interesting is it to compare the analysis of the simple pipe sound with that of the artificial vowels. By this means it is possible to appreciate at once the signification of the various forms assumed by the cavity of the mouth in the production of vowel sounds. There appears in correspondence with Hermann's observations a definitely characteristic augmentation area, while the strongly marked primary tone of the simple pipe sound falls into the background as compared with the higher notes of the artificial vowel sounds. The speaker demonstrated a number of the curves he had obtained.

VONSEN (Frankfort) asked whether the tones produced in the nasopharynx were observed in addition to those formed by the mouth.

GUTZMANN (Berlin) replied that the mouth tones alone were observed; in forming the vowel "a" the soft palate was raised, and in forming "o" and "u" the nasopharynx was completely shut off.

The Diagnosis and Treatment of Functional Disorders of the Voice.—GUTZMANN (Berlin).—The speaker demonstrated some instruments for assisting in the diagnosis and treatment of phonasthenia. (a) A small pocket tuning-fork with movable scale, which served not only for diagnostic purposes (for example, determination of vocal pitch and variation of pitch in singers) but also for control of vocal exercises. (b) An arrangement of electrically driven tuning-forks intended to produce an electrification and vibration of the larynx synchronous with the pitch of the fork employed.

The Exactitude of the Reproduction of Tones by Professional Singers.—LOKOLEWSKY (Königsberg).—Systematic observations with the object of determining the correspondence between given and reproduced tones were made by KLÜNDER, in whose experiments, however, both tones were in all cases produced synchronously. There were wanting, therefore, observations of great importance in regard to the physiology of the singing voice, namely, how exactly an interval to a given tone could be sung, and how exactly a given tone could be struck after it had ceased to sound. The following experiments are intended to fill these gaps:

The apparatus employed by the author for registering the tone vibrations consists of a combination of Einthoven's string galvanometer and Weiss's phonoscope. The tone produced by the organ pipe was registered by the string galvanometer and the reproduced tone by the phonoscope.

The experiments were carried out on four ladies and three men belonging to the opera. The first two series of observations—(1) reproduction of a given tone sounding at the same moment, and (2) reproduction of a given tone after it has ceased to sound—showed how extraordinarily exactly the human larynx can strike the true pitch. The best result attained showed an error of only .07 per cent. The third series—singing of intervals to a given tone sounding at the same moment—gave a surprisingly different result from those of the first two series. The errors were considerably greater (as much as 4.54 and 5.51 per cent.). It was striking that the fifth was sung with the least truth.

The author explained the great inexactitude in singing the intervals by

the fact that the errors, inseparable from the difficulty of singing quite true intervals, become combined with those which the singer is accustomed to make through his habit of practising with softened piano. Among forty-six curves the note sung was in thirty-six instances too low and in only ten too high.

Experimental Investigation of the Influence of the Pharyngeal Constrictors on the Laryngeal Musculature.—Dreyfus (Strasbourg).—The experiments were designed to throw light on the question of how to explain the characteristic laryngoscopic picture observed in certain pharyngeal paralyses, such as bulbar and also post-diphtheritic paralysis. The deficient closure of the glottis during phonation is to be ascribed, not to an adductor paralysis of nervous origin, but to the paralysis of the pharyngeal constrictors. As a result of the latter the muscles of phonation are deprived of the powerful purchase which is necessary for the production of a resonant voice, and which is supplied by the concomitant contraction of the laryngo-pharyngeal muscle, which is attached on either side to the thyroid and cricoid cartilages, and, when it contracts, steadies them. Dreyfus, experimenting on dogs, divided, without injury to nerves, in some cases the middle (*M. hyo-pharyngeus*) and in others the inferior (*M. thyro-crico-pharyngeus*) constrictor, and obtained on division of the middle constrictor marked interference with swallowing, but no interference with the voice, and, on the other hand, on division of the inferior constrictor, no difficulty of swallowing, but considerable disturbance of the voice. The inferior constrictor is, therefore, an important laryngeal muscle concerned with the voice. Its action is indispensable for closure of the glottis, but not for swallowing, and all interferences with phonation in bulbar and post-diphtheritic paralysis are to be attributed to its failure.

NADOLECZNY (Munich) warmly recommended Gutzmann's pocket tuning-fork, and regarded as useful also his method of electrification and vibration of the larynx. Most singers have only a relatively perfect sense of pitch, while some very unmusical people have a perfect sense of pitch. He asked Dr. Dreyfus whether his experiments threw any light on the vocal disturbances of acute pharyngeal catarrh. It seemed to him possible that in this condition the functions of pharyngeal muscles might be directly interfered with, or perhaps their contractions were voluntarily restricted.

KÜMMEL (Heidelberg) asked Dr. Gutzmann whether the rhythmical succession of electrical stimuli was in reality more effective than the purely mechanical stimuli due to the continuously sounding tuning-fork. The latter often had a disconcerting effect in phonasthenia.

BOENNIGHAUS (Breslau) asked what was the effect, for example, in bulbar paralysis, of artificial fixation of the larynx. If the opinion of Dr. Dreyfus were correct, the voice should then become normal.

KILLIAN (Freiburg) regarded a tuning-fork apparatus, such as that of Gutzmann, as of the greatest value in hysterical aphonia.

GUTZMANN, in reply, said that the conditions in phonasthenic patients were so extraordinarily diverse that one could never have too many ways of testing them. Especially in hysterical aphonia the electrically driven tuning-fork was more effective than vibration methods.

SOKOLOWSKY, in replying, confirmed the remarks of Nadoleczny in reference to the sense of pitch of singers and musicians.

DREYFUS, replying, said that the vocal disturbances in pharyngeal catarrh and acute diseases of the pharynx may certainly be attributed to

voluntary restriction of movement. Artificial compression and fixation of the larynx would prove nothing. They could not replace the innervation of the muscles; and, besides, the inferior constrictor not only compressed the larynx, but also drew it upwards.

Thos. Guthrie (Trans.).

(To be continued.)

PROCEEDINGS OF THE AMERICAN LARYNGOLOGICAL, RHINOLOGICAL, AND OTOLOGICAL SOCIETY.

Seventeenth Annual Meeting, Atlantic City, June 1, 2, and 3, 1911.

Report by DR. L. M. INGRAM.

Thursday, June 1, 1911.

(Continued from vol. XXVI, p. 661.)

The Method of Giving Anæsthesia in Operations upon the Upper Respiratory Tract.—**Dr. James Gwathmey** (New York City)—The surgeon about to operate upon some portion of the upper respiratory tract may select from such a variety of agents and methods for inducing and maintaining anæsthesia that the question of safety and after-effects may be absolutely eliminated. The agents for local anæsthesia are cocaine and its many allies, and morphine, ethyl chloride, and sterile water. Morphine should precede cocaine whenever possible, rendering the latter safer from inhibitory reflexes, improving the anæsthetic, and removing the psychic element. The general anæsthetics are nitrous oxide gas, ether, ethyl chloride, anæsthol, chloroform, morphine, and, in emergency cases, alcohol in the form of whiskey or brandy, combined with morphine. The methods employed were enumerated as follows: Spinal analgesia, rectal anæsthesia, intra-venous anæsthesia, regional analgesia, morphine anæsthesia, combined local and general anæsthesia, hypnotism or mental suggestion combined with some other method, the sequestration method, intra-tracheal anæsthesia, pulmonary anæsthesia by the nasal or oral route, and electrical anæsthesia (one case in human being). The scientific basis for the successful administration of all pulmonary anæsthetics consists, in addition to the usual preparation of the patient, of (1) some preliminary medication; (2) anæsthetic so arranged that any sequence or combination can be quickly made without interfering in the slightest with the operation; (3) all anæsthetics heated to the temperature of the blood; (4) combined with oxygen when indicated; (5) apparatus so constructed as to be able to administer the gases or vapours under normal atmospheric pressure or positive pressure, and with moisture. Dr. Gwathmey emphasised the value of preliminary medication. Given thirty minutes before the operation it quiets a patient, as indicated by the normal heart-sounds; shortens the period of induction, abolishes unnecessary reflexes, and blunts others; diminishes the amount of the anæsthetic one third to one half; renders holding and stopping unnecessary; diminishes the secretion of saliva to a negligible quantity,

and allows the patient to come out of the anæsthetic quietly and naturally. A pint or two of normal saline solution given *per rectum* five or ten minutes before the close of the operation, and while the patient is still in full surgical anæsthesia, relieves post-anæsthetic dryness of the mouth and thirst, brings the patient out strong, and usually with no disposition to vomit. In the majority of cases the narcosis should be induced with nitrous oxide and oxygen, the continuance of this combination depending upon the exigencies of the case. If a change is indicated an even narcosis can be maintained with warm ether or chloroform, and oxygen. The final stages of any operation lasting an hour or more should be nitrous oxide gas and oxygen. When this plan is followed in over 90 per cent. of all cases the patient suffers no unpleasant after-effects. Laboratory experimentation and clinical experience on his own part, substantiated by that of others, established the value of the method of giving warm ether or chloroform vapour, combined with oxygen, and passed through water to purify it. It is yet to be proved that any pathological changes follow the administration of warm chloroform vapour with oxygen. The mastoid operation is the easiest from the anæsthetic standpoint, deep narcosis being necessary only in the initial stages. For the submucous operation, the Rose position, with warm chloroform vapour and oxygen, is preferable when a general anæsthetic is to be given. Dr. Gwathmey outlined briefly the methods of giving anæsthetics employed in various hospitals visited by him. While he had purposely refrained from going into detail regarding any given method, and had refrained from the positive advocacy of any special procedure, he said, with reference to pulmonary anæsthetics in general, that the narcosis is always under control, and may be modified according to the exigencies of the case. In the event of hæmorrhage or shock the amount of anæsthetic may be lessened and the oxygen increased, thus keeping the pulse and respiration as nearly normal as possible. If, as the operation is drawing to a close, the pulmonary anæsthetic is withdrawn, the patient will be practically out of its influence by the time the operation is completed. The preliminary medication and the raising of the patient's head as soon as returned to bed will give a quiet and natural awakening from the anæsthetic.

Dr. FRANCIS R. PACKARD (Philadelphia) confined his remarks to the method employed at the Pennsylvania Hospital in Philadelphia. The vast majority prefer ether as the anæsthetic agent, in combination with some other drug—usually ethyl chloride. The anæsthesia is begun with ethyl chloride, followed by ether, with Dr. Gwathmey's or some other similar apparatus. He had used the Rupert apparatus. The anæsthetic is given by a trained woman anæsthetist. The position he prefers is the recumbent, with a sand pillow under the head and shoulders. The old method in most hospitals was to have the resident give the anæsthetic—a custom which was responsible for more disasters than is generally realised. The giving of an anæsthetic to a patient about to be operated upon for the removal of tonsils or adenoids is too serious to be entrusted to one just out of college. Disasters in the giving of anæsthetics often occur as the result of the improper preparation of the patient before the operation. He cited two cases in his own practice which illustrated this point: the patients, having each of them eaten a full meal, were nearly asphyxiated during their anæsthesia.

Dr. JOSEPH A. WHITE (Richmond) said the choice in anæsthetics is generally given to chloroform in the south, though there is now a tendency to give ether or ether mixed with chloroform, as suggested by Dr.

Gwathmey. This is more especially the case since the old cumbersome methods of giving ether have been discarded. Probably we do not credit the anæsthetic with all the fatalities that might be traced to this source. Deaths occurring four or five days after the operation are usually attributed to the operation, or to the patient's inability to recuperate, whereas many such cases are directly caused by the effects produced upon the patient's system by the anæsthetic, and therefore should be attributed to the anæsthetic. In doing operations about the face and mouth it is desirable to eliminate all apparatus. In such cases rectal anæsthesia is advantageous, and should come more into favour than it is at present. The anæsthesia is begun by mouth and continued by the rectum. Notwithstanding the fact that the anæsthetist cannot watch the reflexes it is not as dangerous as pulmonary anæsthesia. Moreover there is no need for any complicated apparatus; an ordinary wide-mouthed bottle with a cork in which are two holes, with two glass tubes bent at right angles, to one of which a small hand-ball is attached and to the other the rectal tube is sufficient. This is half filled with ether and placed in a vessel of hot water, because the vapour should be warm, and the hot water makes it evaporate more readily. It is not necessary to put the rectal tube far into the bowel; from four to six inches suffices. The anæsthetist places one hand over the sigmoid flexure to keep the track of the amount of tympanites, and uses the other to force the vapour into the bowel. If the abdomen should become too much distended, it is only necessary to separate the rectal tube from the bottle, and by pressure upon the abdomen the gas is allowed to escape, and the tube is then re-connected. The preparation of the patient beforehand consists in giving a brisk purge the day before, and two high soap enemata two hours before the operation. If there is much gas a soda enema might be given. To get rid of the peristaltic action a small dose of morphia or hyoscine may be given.

Dr. J. A. STUCKY (Lexington) emphasised the importance of the point Dr. Gwathmey made with reference to the quantity of the anæsthetic used in the mastoid operation. The majority of operators had been in the habit of using perhaps four or five times as much as is necessary. After the first stage of the operation practically no anæsthetic is required. In doing the radical mastoid operation if the surgeon cleans out the middle ear first instead of last it is possible to decrease the quantity of anæsthetic by one half. Many slow recoveries and much so-called shock is due to improperly conducted anæsthesia. Rectal anæsthesia undoubtedly has a place in surgery, but the æsthetic objection to the method must be overcome.

Dr. GWATHMEY, in reply, said that the surgeon who insists upon the use of any particular anæsthetic, no matter what it may be, more or less handicaps the patient. In many cases contingencies are apt to arise which neither the surgeon nor the anæsthetist can anticipate, and the anæsthetic must be varied in whatever manner the exigencies of the case may demand. Referring to the use of chloroform in the south, Dr. Gwathmey called attention to the fact that he was one of the first to show that chloroform is safer in the south than in the north, and to establish a reason for this by laboratory experimentation. He had found that it requires twice as much warm chloroform to kill an animal as it takes of cold chloroform to accomplish the same end. In giving chloroform warm the vapour tension is decreased, making it almost impossible to give an overdose. The warm vapour is inhaled and exhaled with greater rapidity than is the cold vapour. For this reason it is safer to give chloroform in a warm climate than in a cold, and in the summer than in

the winter. He considered Sutton's apparatus for giving rectal anaesthesia the best. It has a mercurial manometer attached, and so arranged that if the tension goes beyond a certain point a valve lets out the surplus gas, making it impossible to get over-distension. The apparatus is also supplied with a thermometer for regulating the temperature of the ether. The ether should go in at a temperature of 98° or 99° F., and no higher. If water is not available for the suction apparatus the electrical pump may be used, but the speaker preferred the water-pump because it is simple and does not get out of order. Air-suction is preferable to either water or electricity.

(To be continued.)

BRITISH MEDICAL ASSOCIATION.

EIGHTIETH ANNUAL MEETING, LIVERPOOL, JULY 23, 24, 25,
AND 26, 1912.

Section of Otology.

The following subjects have been selected for special discussion :

Wednesday, July 24, 10 a.m.—"Acute Middle-ear Suppuration, its Neglect and Proper Treatment."

Thursday, July 25, 10 a.m. (together with the Section of Laryngology).—"The Education of the Specialist in Laryngology and Otology."

We observe among the Vice-Presidents of this Section the name of Mr. Macleod Yearsley. We regret that in the list of office-bearers of this Section published in our last issue Mr. Macleod Yearsley's name was accidentally omitted.

Section of Laryngology and Rhinology.

The following subjects have been selected for special discussion :

Wednesday, July 24, 10 a.m.—"The Differential Diagnosis of Oesophageal Stenoses."

Thursday, July 25, 10 a.m. (together with the Section of Otology).—"The Education of the Specialist in Laryngology and Otology."

Friday, July 26, 10 a.m.—"The Treatment of Chronic Suppurative Disease of the Ethmoidal Sinuses."

Abstracts.

NOSE.

Paunz, M. (Budapest).—The Complications of Empyema of the Maxillary Antrum of Dental Origin. "Archiv. f. Laryngol." vol. xxv, Part III.

Four cases are reported, in three of which there occurred extensive acute periostitis of the upper jaw and inflammation spreading from the antrum to the other accessory sinuses. The exciting cause in the first two was the extraction of a tooth and in the third the fitting of a crown with a copper peg into a tooth-stump. In the fourth case the disease was chronic, but originated from the root of a carious molar which projected into the antrum. Inflammation spread to the ethmoid and frontal

sinuses, and led to suppuration of the lacrimal sac. A striking feature of all the cases was the extensive destruction of bone. In two of them there occurred necrosis of the whole facial wall of the antrum; in two there was destruction of the whole of the lamina papyracea and of the dividing walls of the ethmoid cells; in one the nasal process of the superior maxilla and a part of the floor of the nose were destroyed. Death occurred in one case from leptomeningitis; the other three recovered. Antral empyemata of dental origin as distinguished from those due to nasal infection are characterised from the beginning by periostitis and involvement of the bone, as well as by a decided tendency for the inflammatory trouble to ascend from the antrum to the other sinuses.

Thomas Guthrie.

Handley, W. Sampson.—**Ivory Exostosis of the Frontal Sinus.** "Proc. Roy. Soc. Med.," December, 1911 (Clinical Section).

The patient, a man, aged thirty-five, had noticed a lump growing on the inner side of the right eye for about three years. The patient had



suffered from bilateral nasal polypi for many years, and five years ago had had three "black eyes" on the right side in quick succession; he thought that there had been some swelling ever since. The patient did not complain of pain, but, on account of the deformity present, an incision was made on Killian's plan, exposing the exostosis, which was found to be continuous with the frontal bone at the inner [posterior.—Abs.] wall of the

sinus: the base was divided with a chisel, and, with some difficulty, the growth was removed after being rocked with lion forceps. The bleeding was free, and air bubbled up, showing that the cavity communicated with the nose. The wound was allowed to heal by granulation. From the skiagram



the tumour appears to have grown from the posterior wall of the frontal sinus and to have pierced the floor of this cavity at its inner part, displacing the eyeball downwards and outwards. On section the superficial portion proved to be dense, while towards the base it consisted of softer bone.

J. S. Fraser.

Tilley, H.—Acute and Chronic Suppuration of the Nasal Accessory Sinuses. "Lancet," October 28, 1911, p. 1179.

This lecture deals with aetiology, diagnosis, and treatment from the point of view of the general physician and surgeon. In his conclusions, the author considers that 6·8 per cent. represents the average of sinus suppuration in the general mass of the population. No categorical reply can be made to the important question—To what degree does the presence of chronic suppuration in one or more sinuses (*a*) imperil the patient's health, (*b*) constitute a danger to life? He deprecates radical operation before simpler measures have been tried.

Macleod Yearsley.

PHARYNX AND NASO-PHARYNX.

Sheedy, Bryan D.—Tonsil Removal, with Special Reference to Quinine Anæsthesia. "Med. Record," October 21, 1911.

The writer describes four cases in which, following the injection of cocaine and adrenalin solution into the tonsils for the purpose of inducing local anæsthesia, sudden death occurred from cocaine poisoning. He regards this procedure as too dangerous for use, and has replaced it by injecting a 5 per cent. watery solution of quinine bisulphate. About a half drachm of the solution should be injected at a point between the tonsil and the anterior pillar, and the same amount just in front of the posterior pillar; the enucleation of the tonsil may be begun as soon as the injection is complete, there being no occasion to wait as in cocaine anæsthesia.

Lindley Sewell.

Sheldon, Stratford.—Sudden Death by Asphyxia after Diphtheria. "Australasian Medical Gazette," August 21, 1911.

A girl, aged fourteen, was in hospital during April with diphtheria. She was convalescent during all May, and discharged to her home on June 1. On June 10 while at a meal she started to cough, became unconscious and died. *Post-mortem*: All organs apparently healthy. The trachea was severed one and a half inches below its commencement. Nearly the whole of the lumen was occupied by a partly adherent greenish-yellow slough about two inches long. A small ulcerated area was present in larynx. A cultivation of diphtheria bacilli was obtained both from the larynx and the slough. It is evident that death resulted from suffocation by plugging of the trachea by the slough.

A. J. Brady.

Wells, Walter A.—Report of Three Cases of Fibrous Polyp of the Nasopharynx (Naso-pharyngeal Fibroma). "Laryngoscope," July, 1911.

The author points out that a fibrous polyp must be distinguished both from a myxomatous and a malignant condition. It is a benign growth which seldom recurs after operation and often undergoes spontaneous retrogression. It is found most frequently in the male child at about puberty, and frequently gives rise to recurring hæmorrhages and tends to infiltrate the surrounding structures. Views as to their origin are that they arise either in the fibrous aponeurosis covering the basioccipital, or from the choanal region, or possibly, according to Killian, from the maxillary antrum. Rouvillois, in a case examined *post-mortem*, found the point of attachment to be in the region of the spheno-vomerine articulation.

The author considers that although retrogression may take place when adult life is reached, operation is indicated owing to the risk of hæmorrhage, deformity, and interference with articulation, deglutition, and respiration.

The possible methods of operation are by means of snare, cautery, or scissors through the natural passages, or access is obtained to the tumour by an artificial route created by a preliminary operation.

The author strongly favours removal by means of a powerful snare introduced through the nose, stating that, according to Delavan, not only is there less risk, but recurrences are not more frequent after operations by this method than through an artificial route. The author has operated upon three cases by this method without shock or severe hæmorrhage, and there has been no recurrence in either case—now nine, six, and one year after operation respectively. In each case the growth was pedunculated.

John Wright.

EAR.

McDonald, C. L. (Cleveland, Ohio).—Results of the Treatment of Otitis Media by Vaccine Therapy. "Journ. Amer. Med. Assoc.," June 3, 1911, p. 1647.

The cases selected for treatment were arranged in two classes—subacute and chronic. In thirteen subacute cases the *Staphylococcus albus* was found to be the causative organism twelve times and the pneumococcus once. The ear disease followed measles, pneumonia, scarlet fever, or influenza. All were treated by an autogenous vaccine, and all got well, and the author concludes that "no class of cases respond more readily to bacterial therapy than do cases of subacute otitis media."

Seventeen chronic cases, classifying as such those cases in which the discharge had lasted for three months or longer, were submitted to the treatment. Benefit was obtained when the discharge was slight and without much odour. Infections of staphylococcus, streptococcus, and pneumococcus, either alone or combined, were markedly improved or entirely cured, cases with mixed staphylococcus and *Bacillus pyocyaneus* proving the most obstinate. In nine cases a short motile bacillus, Gram-negative, was found, and vaccination with this organism produced little or no improvement. One case, giving pneumococcus at one time and staphylococcus at another, was temporarily cured by vaccination, but the discharge always recurred a few weeks after the treatment was stopped. In some cases, again, the treatment was followed by a lessening in the quantity of discharge, but at no time did it entirely disappear. Of the seventeen chronic cases three recovered completely, five were improved, and nine showed no change. The author advises vaccine therapy, therefore, in subacute cases, but thinks it of no special value in chronic cases. It may be tried, however, when other measures fail. Dan McKenzie.

Luigi, Umberto (Torrini).—Otalgia. "Rev. Hebdom. de Laryngol., d'Otol. et de Rhinol.," April 29, May 6, and May 13, 1911.

This paper contains a full account of the conditions which give rise to otalgia, that is, pain in the ear of a neuralgic nature as distinguished from pain in the ear due to a lesion in the ear itself (otodynia).

The author classifies these conditions according to the nerve in whose field of innervation they are situated, and he traces in each class the nervous connection between the site of the lesion and the ear:

(1) Superior maxillary division of the fifth nerve, *e. g.* diseases of the mucosa of the nose and accessory sinuses, the soft palate, and the upper alveoli and teeth.

(2) Inferior maxillary division of the fifth nerve, *e. g.* diseases of the lower teeth, gums and jaw, the parotid gland, the temporo-maxillary articulation, the tongue, and the sublingual gland.

(3) Glosso-pharyngeal nerve, *e. g.* diseases of the base of the tongue, lingual and palatine tonsils, and pharynx.

(4) Pneumogastric nerve, *e. g.* diseases of the epiglottis, larynx proper, subglottic region, and œsophagus.

(5) Facial nerve (it is pointed out that the facial nerve should not be regarded as a purely motor nerve), *e. g.* herpes.

(6) Superficial cervical plexus, *e. g.* cervical adenitis.

(7) Carotid sympathetic, *e. g.* carotid aneurysm.

(8) Hysteria.

(9) Various conditions, *e. g.* neuritis and perineuritis of toxic origin, malaria, syphilis, blood diseases, affections of the Gasserian ganglion, sexual organs, etc.

The pain of otalgia may be felt in the auricle, the external auditory meatus, or the tympanic cavity. Sometimes it is spontaneous with quiet intervals and exacerbations; sometimes it is elicited only by pressure or rubbing, or by movement of the diseased parts. It is usually worse at night, and is often increased by cold.

The diagnosis of otalgia is based on the absence of any lesion in the ear likely to cause pain, and the presence of one or other of the conditions noted above.

The prognosis is usually that of the causal lesion. If, however, the causal lesion is of a progressively destructive nature, the nerve endings may be destroyed, and thus the otalgia may disappear. Hysterical cases are usually easily cured if recent, but if chronic are often very stubborn.

As regards treatment, the causal lesion should, of course, be attended to. Local therapeutic measures include sedative instillations into the external auditory meatus, blisters over the mastoid, the galvanic current, Eustachian injections of chloroform, ether, turpentine, amyl nitrite, etc.

John M. Darling.

Blake, C. J.—Consideration of the Mechanism of Pressure in the Production of Vertigo, and Report of Cases. "Boston Med. and Surg. Journ.," September 28, 1911, p. 469.

The author has already written upon this subject. His hypothesis is that, while moderate degrees of variation from the constant of the ampullary end-apparatus could be compensated for by the provisions for movement in the normal sound-transmitting apparatus, and in the aqueducts, greater degrees of variation, either beyond the possibility of normal compensation, or inhibition of the normal compensation itself, would be productive of symptomatic results unless the inhibition had been one of such slow increase as to permit of gradual accommodation to the abnormal conditions, evidenced, for instance, in cases of progressive stapes fixation, or of progressive contraction of the tensor tympani muscle. In this paper he deals more especially with the effects of lumbar puncture upon vertigo, promising to follow it later with a tabulation of cases and the addition of observations on caloric nystagmus, and he asks for comparative observations from others upon the value of lumbar puncture. He gives notes of ten cases.

Macleod Yearsley.

MISCELLANEOUS.

Thost (Hamburg-Eppendorf).—Chronic Pemphigus of the Mucous Membrane of the Upper Air-Passages. "Archiv. f. Laryngol.," vol. xxv, Part III.

Under the term "pemphigus" are included a number of very different diseases affecting the skin and mucous membranes. The four cases which the author describes, as well as a number collected by him from the literature, appear to form a well-defined group, and present the following characteristic features: (1) The bullæ arise on mucous membrane alone, or extend on to the skin only at its junction with mucous membrane. (2) The conjunctiva of the eye is invariably affected, its shrinking and contracting leading later to phthisis bulbi. (3) There is an invariable tendency to adhesion of neighbouring areas of mucous membrane with contraction of the deeper layers. (4) The course is chronic and afebrile. (5) The skin is atrophic, the musculature poorly developed, and there is general cachexia. (6) No drugs have any influence on the disease. Wassermann's reaction is negative.

The characteristic feature is not the formation of bullæ, but the contraction which affects especially the soft palate and uvula, the orifices of the Eustachian tubes, and the entrance to the larynx and œsophagus. The ætiology of the disease is obscure, but among the many suggestions which have been put forward the writer favours that of a trophic disturbance of the mucous membrane.

The disease runs a very slow course. One of the author's cases had been constantly under his observation for sixteen years and had of late almost reached a standstill. As a rule, the disease does not directly lead to death, but at most hastens it, the patient being already cachectic or in a condition of senile decay. No drug treatment has proved of the slightest value.

Thomas Guthrie.

Escat (Toulouse).—Pneumo-tympanum and Pneumo-Frontal Sinus. Complications of Influenzal Rhinitis. "Annales des Maladies de l'Oreille, du Larynx, du Nez et du Pharynx," vol. xxxvii, No. 9.

The author has applied the designations *pneumo-tympanum* and *pneumo-frontal sinus* to define a condition in which the tympanum and its adnexa or the frontal sinus become filled with compressed air. Several cases of this nature have been observed by him during influenzal coryza. The ætiology and mechanism of production are in both instances identical: a patient blows the nose violently or improperly, and in so doing pellets of exudate are driven into the Eustachian tube or fronto-nasal duct, which act as valve-plugs, so that if air be forced into the sinuses above, it is retained there until such time as the plug is displaced either spontaneously, artificially, or by disintegration, or undergoes absorption.

Pneumo-tympanum is for obvious reasons more frequently met with in adults and is especially prone to occur when the nasal discharges are viscid. The onset of the affection is sudden; whilst blowing the nose the patient is seized with pain in one or both ears, accompanied with deafness and sometimes tinnitus and vertigo. The pain resembles that attending acute otitis media, but differs from it in being more intensified by blowing the nose, sneezing or coughing. Hyperacousis dolorosa is usually present. Hypoacousis is variable in degree, more frequently being slight. Rinne may, as is usual in slight trouble of the conduction media, be positive, but Weber is always lateralised to the affected side. Bone-conduction for the watch is good. In only two of the author's

cases was the auditory tonal field raised, but in these, the writer points out, the derangement was interesting; it resembled the conditions met with in the normal subject when the intra-tympanic air tension is augmented by a prolonged Valsalvan test, viz.: (1) Elevation of the lower tone-limit; (2) diminution for sounds concerned in articulate speech, especially for lower tones; (3) an exaltation for the perception of acute sounds, manifested by an abnormal elevation of the upper tone-limit. Fever is absent, unless the result of an antecedent influenzal infection. Otoscopy reveals a red bulging membrane. The affection usually terminates in from three to six days by resolution, in which case the plug obstructing the Eustachian tube escapes spontaneously, undergoes disintegration, or is removed by the aspiratory action of deglutition. Where the tube remains obstructed the air becomes absorbed. At other times acute otitis supervenes (twice in fifteen of the author's cases).

Pneumo-frontal sinus has been exclusively met with in adults. Like the preceding affection it occurs suddenly during improperly directed efforts in blowing the nose. Simultaneously with the blocking of the fronto-nasal canal, the patient experiences an atrocious pain in the region of the ascending process of the superior maxilla, radiating over the whole of the corresponding side of the forehead and especially to the eyebrow. There is marked cutaneous hyperæsthesia. The pain is increased after food and exposure to cold, but disappears completely when the patient is warm in bed, and is tolerable so long as he keeps his room. These effects of temperature were evident in most of the author's cases. Sometimes the sinus undergoes sudden decompression, affording relief. The symptoms attending this the writer considers pathognomonic of the affection. The phenomenon generally happens after blowing the nose, and is always preceded by an increase of spontaneous pain and a sense of tension in the region of the nasal process of the maxilla. The patient experiences the sensation of a small detonation in the nose, accompanied or followed by a sibilant râle lasting two or three seconds: during its occurrence the pain attains its greatest intensity, but ceases with it, bringing real relief. This symptom, dependent on decompression from retropulsion of the plug engaged in the fronto-nasal canal, may end the trouble, there are cases where occlusion again takes place and then recurrence follows. Anterior rhinoscopy reveals muco-pus in the middle meatus, but in many cases the author only observed inflammatory swelling of the middle turbinated body especially on its meatal surface. Lateral endo-rhinoscopy with Valentine's salpingoscope in the author's hands revealed nothing of any value. Diaphanoscopy showed the affected side to be as clear as the healthy. The affection usually has a duration of from three to ten days, ending by resolution. It may, however, terminate in frontal sinusitis, which must be apprehended when (1) the duration of the affection exceeds eight or ten days; (2) the middle meatus contains fœtid pus, reappearing after removal; (3) fever sets in associated with severe frontal headache and supra-orbital cedema. The differential diagnosis and treatment in the case of both pneumo-tympanum and pneumo-frontal sinus are dealt with at length.

H. Clayton Fox.

Priestly, Henry.—*An Attempt to Differentiate the Diphtheroid Group of Organisms.* "Proc. Roy. Soc. Med.," December, 1911. (Pathological Section.)

Priestly points out that organisms resembling more or less closely the diphtheria bacillus have been isolated from almost every part of the human body. The most familiar of these organisms are the bacillus of

Hofmann and the *Bacillus xerosis*. Diphtheroids have been regarded as the cause of general paralysis of the insane and of locomotor ataxia. They also occur in many cases of sore throats and in "colds" in the head (*Bacillus coryzæ segmentosus*). Priestly examined forty-nine strains of diphtheroids, of which twenty-five came from the ears. He examined four cases of otitis media during scarlet fever, and in three of these he isolated the same organism. He further examined the ears of eighteen normal persons, and in fifteen of them found diphtheroids. Priestly concludes that there is a definite type of diphtheroid organism occurring in the ears of normal people.

J. S. Fraser.

REVIEW.

Atlas of Killian's Tracheo-Bronchoscopy. By Sanitätsrat Dr. MANN.
(Translated by THOMAS GUTHRIE, M.B., F.R.C.S. Liverpool.)
London: John Bale, Sons & Danielsson, Ltd., 1911.

This atlas contains a series of coloured plates representing pathological preparations from cases examined during life by means of tracheo-bronchoscopy. The endoscopic appearances in the individual cases are referred to but not depicted.

Altogether there are twenty plates, most of which are life-size. Each is furnished with an outline drawing and key on a superposed sheet of transparent paper, so that the important features are easily recognised.

The first four plates illustrate stenosis of the trachea from disease in the thyroid gland—suppuration, sarcoma, and carcinoma. The disturbing effect of a simple goitre on the trachea is not shown, although the association is common, the author having had no *post-mortem* examination of the kind.

Four plates illustrate stenosis of the trachea and bronchi due to cesophageal carcinoma.

A very interesting condition, and one likely to puzzle at an endoscopic examination, is shown in Plate VII. Owing to cancerous metastasis the interbifurcal lymphatic glands have enlarged, caused a widening of the carina and consequent stenosis of both bronchi.

The effects of aneurysms in causing closure or kinking of the trachea are well illustrated. The author does not share the general dread of tracheoscopy in such cases.

Three rare cases are illustrated in which primary carcinoma involved respectively the right and the left main bronchus, and the lower portion of the trachea and both bronchi.

Finally, stenoses due to syphilitic cicatrices and to scleroma are depicted.

The work is unique, and will prove of interest and value to those practising bronchoscopy. The plates are of high artistic merit. The letter-press—in German, French and English—is concise, but sufficient for a proper appreciation of the conditions shown. Dr. Thos. Guthrie's English translation, in every respect, is admirable.

A. Brown Kelly.

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**CASE OF THROMBOSIS OF THE LATERAL SINUS, RESECTION
OF INTERNAL JUGULAR, SPONTANEOUS EVACUATION
OF ABSCESS OF POSTERIOR FOSSA THROUGH THE
FORAMEN JUGULARE; RECOVERY.¹**

BY PERRY G. GOLDSMITH, M.D.,

Senior Assistant Surgeon, Department of Laryngology and Otology, Toronto
General Hospital, Toronto, Can.

THESE are the notes of a case showing some of the graver complications of chronic suppuration of the middle ear, one occurrence alone, viz. the evacuation of an abscess of the posterior fossa of the skull through the foramen jugulare, being in itself sufficiently rare to justify the report.

A. G —, aged forty-nine. Family and personal history good and in no way bearing on his present complaint. Since 1903 he suffered from a periodical discharge of the right ear. Until his present illness that discharge was looked upon as an inconvenience sufficiently important to require attention only when the odour was noticeably foul. Instillation of drops and syringing usually controlled the discharge, sometimes stopping it for weeks. In 1904 there was some blood seen in the aural discharge. From 1905 until 1907 there was no discharge—at any rate none appeared externally. After the later date the discharge was practically constant until the present illness, but it was never at any time profuse. Last September there was an increase, associated with decided deafness and a dull pain in the same side of the head. During this time and during the autumn he had frequent attacks of nausea and vomiting. He became very indifferent to his work

¹ Read at the Canadian Medical Association Meeting, Montreal, 1911.

and interests and at times was decidedly dull and stupid. There were no chills or any external evidence of mastoid involvement. He was seen by his physician in the second week of January, 1911, who found the condition as follows: Temperature 99° F., pulse 100. No mastoid tenderness or œdema. Through the remains of the drum-head the mucous membrane was noticed to be thickened and moist. There was no quantity of pus in the ear nor was there any encroachment of the canal wall into the external auditory meatus. The patient complained of pain in the side and top of the head, and occasional attacks of nausea but no sudden vomiting. Examination of the eye-ground normal. Labyrinth tests not taken. Within one hour after the examination the patient had a very decided chill followed by sweating. Though he was in a part of the city he knew well, he could not make out where he was. I was asked to see the case and found the patient quite flushed; temperature 106° F., pulse 110, respirations 28. The aural condition was about the same as noted above except that there was marked pain on pressing the jugular directly behind the angle of the jaw. White blood-count 17,000. Careful physical examination by a physician failed to detect anything to account for this condition. Another chill followed in two hours and it was decided to operate that night.

I will not go into the operation step by step but will give the after-features of interest.

(1) *The Density of the Bone.*—I have never seen anything approaching the hardness of the mastoid; there was not a cell found until the antrum was reached. I am sure this bone had all the features of what has been termed the billiard-ball mastoid. The radical operation was performed, and in lowering the facial ridge the bone was so dense here that the cutting edge of a first class chisel was broken and remained embedded in the bone until cut out.

(2) *The Condition of the Mastoid Antrum.*—As soon as the antrum was reached pus welled up at once. There was only a small quantity, however. The upper and posterior walls of the antrum as well as of the aditus and tympanum were gone, and in their place was dura covered with granulating tissue. The posterior wall of the antrum was gone, and the lateral sinus covered with pus and granulating tissue took its place. The cavity was cleared of necrotic tissue, and carefully examined. No opening was seen in the external semi-circular canal nor was any carious area found communicating with the labyrinth. The dura was not unduly bulging, but on separating it from the bone above and in front where granulating tissue was excessive, a gush of about two drachms of pus took place. A small gauze drain was inserted here and the dura left alone, as one might easily break down any adhesions which were localising the pus. The sinus was discoloured and soft and occlusion was self-evident. On being opened a soft yellow clot was removed. No bleeding took place either above or below, and only above after exposing the sinus nearly to the torcular, and plugging easily controlled it. It was then decided to remove the jugular in the neck. This was done, the vein being removed above the facial. There was no clotting in the jugular. The operation being very long and fatiguing, I asked the assistant to sew up the neck and put in a cigarette drain. The lower end of the vein was not brought into the neck as I usually prefer to do.

The subsequent course of the case presents some interesting features, namely:—

- (1) The occurrence of a severe septic pharyngitis and laryngitis.
- (2) The escape of a large collection of pus through the neck wound, the abscess in the posterior fossa.
- (3) The occurrence of acute labyrinthitis and facial paralysis—weeks after the operation.

While during the four days following the operation (January 21) the patient was free from pain he continued to have an evening rise of temperature, 100° to 101.2° F., with pulse nearly always below 70. Fundi oculi normal. Restlessness marked, requiring sedatives. Quinine and urotropine were administered every four hours. At this time the white blood-count was 20,900. He now complained of pain in the neck and side of his head. The gauze in the neck wound, which was daily removed, was very lightly packed so as to encourage drainage. On January 25 hot bichloride fomentations were now applied to the neck. On January 27, following the removal of the gauze from the neck, there gushed out about three ounces of very foul greenish pus. During the next few days, where we anticipated a decided improvement in the patient's condition, it was disappointing to find the patient much worse. Temperature continued to remain about 104° F., and with pulse about 100. There was considerable cough, rusty sputum and sore throat. The faucial arches and tonsils were greatly swollen, and on the tonsils there was a greyish exudate which later on extended down the side of the larynx and pharynx and was associated with oedema reaching as far as the ventricular band on the left side. Physical examination revealed roughened breathing over the base of both lungs but no pneumonia. The exudation of the throat and sputum showed streptococci and staphylococci. General supporting treatment with plenty of fresh air was continued for three or four days and the temperature returned to 99° F., but on February 1 there was another rise during the day from 101° to 102° . On this date the patient complained of severe headache and was noticeably drowsy. He also complained of tenderness and throbbing in the back of the neck. This was greatly relieved by another, though smaller, discharge of pus from the neck. The mastoid dressing had been carried out daily during this time, but from the lower end of the lateral sinus groove pus was constantly oozing, pulsating and under pressure. It was very difficult to keep it draining properly. A curved glass tube was used to aspirate the pus. By the softening of the clot in the jugular bulb, moreover, it came from downwards and backwards, apparently from the cavity of the posterior fossa. With a large discharge of pus in the neck the pus from the lower end of the lateral sinus was noticeably less and not pulsating.

The patient's condition then continued quite satisfactory until February 20, when he again had some sore throat and cough, temperature around 103° and 104° F. for several days, and pulse varying from 100 to 130. The condition of affairs in the chest was very similar to what had been observed a few weeks before, but the throat infection was very much milder. Prostration, however, was very great. For the next two weeks the patient gained in strength, the mastoid wound was practically closed, while a small sinus which persisted in the neck soon closed over when a silk ligature came away. At this time the patient complained of a little aching in the side of the face, which was rapidly followed by facial paralysis and very marked vertigo and nystagmus. Owing to an hour-glass contraction of the canal, which somehow was allowed to occur, the caloric tests were not satisfactory. There was a good deal of pain in the head and some nausea, and the patient was unable to walk straight ahead, but would incline to fall to one side. The facial paralysis rapidly became complete. The question of abscess of the cerebellum or acute suppuration of the labyrinth arose. The vertigo, however, and the facial paralysis gradually became less, the former disappearing after having been present for a week, while the latter still showed signs until about three weeks. The present condition of the patient is entirely satisfactory, though a small contraction of the canal makes inspection of the tympanum difficult. There is no aural discharge, and a cotton-tipped probe is removed dry from the tympanum cavity.

**REPORTS FOR THE YEARS 1910 AND 1911 FROM THE
EAR AND THROAT DEPARTMENT OF THE ROYAL
INFIRMARY, EDINBURGH.**

Under the charge of A. LOGAN TURNER, M.D., F.R.C.S.E., F.R.S.E.

II.

**RESULTS OF ENUCLEATION OF THE FAUCIAL TONSILS,
BEING OBSERVATIONS ON A SERIES OF
FIFTY-THREE UNSELECTED CASES.**

BY J. H. H. PEARSON, M.B.,

Clinical Assistant, Ear and Throat Department.

BEFORE considering the results it may be well to state briefly the operative procedure employed.

Novocain as a local anæsthetic was used in all the patients of sixteen years of age and upwards, and chloroform in those below that age. The tonsil was firmly gripped with a volsellum; then with a pair of blunt-pointed scissors, curved on the flat, the plica triangularis was clipped through just internal to the anterior pillar. The dissection was carried backwards in the plane between the tonsillar capsule and the muscular tonsil bed with scissors, sometimes aided by the forefinger. When possible, detachment of the organ from the posterior pillar was also effected in a similar manner. The operation was completed by dividing the lower attachment with a long, curved, probe-pointed bistoury. The snare has now been substituted for the bistoury.

The cases dealt with in this paper were examined at a period varying from two to nineteen months after the operation. In eight of the cases the tonsils had been operated upon with the guillotine from eight months to twenty-four years previously. In one case the guillotine operation had been performed on two occasions.

Indications for Operation.—In forty-two of the cases there had been recurrent attacks of tonsillitis, either lacunar or parenchymatous. In only one of these cases was there any return of sore throat after enucleation. In this case a small piece of the lower pole of the tonsil had been left *in situ*, and the patient stated that after a severe chill, he had some pain in swallowing for a day or two. In seven of the cases there had been repeated attacks of peritonsillitis, with abscess formation. Two of these patients had suffered from two attacks every year for eight years prior to the operation. In no case was there any post-operative attack.

Enlarged submerged tonsils were associated with middle-ear catarrh in two cases, and with chorea in one case. No apparent benefit accrued from the operation in these cases. One girl, aged sixteen, in whom the tonsils were hypertrophied, was said to have suffered from measles on five separate occasions, her last attack being at the age of thirteen. Each attack was accompanied by very acute inflammation of the tonsils. Her tonsils were enucleated fifteen months ago, and as yet she has had no further attack.

In two cases the operation was performed on account of tubercular cervical adenitis, with the object of removing the peripheral focus of infection. In both cases the glands were excised about two months later, and after a lapse of seven months and two months respectively no further glandular enlargement had occurred.

Immediate Effects of the Operation.—In a few cases dysphagia persisted for a fortnight after the operation, but it usually disappeared within a week. In eight cases there was regurgitation through the nose when fluid was quickly swallowed, but the condition never persisted for longer than a fortnight after the operation, and in the majority of cases it passed off by the end of the first week. Most of the patients expressed themselves as feeling in better health after the operation. In a few cases the patients complained of a parched feeling in the throat in damp weather, and one man suffered from pains in the side of his neck.

Effects on the Speaking Voice.—The speaking voice was unaltered in thirty-two of the cases. In nineteen the patients thought that their voices were stronger and clearer. In two cases nasal intonation resulted from the operation. In both of these cases there was marked vertical contraction at the site of operation, with a consequent pulling down of the posterior part of the soft palate. Two patients thought that their voices had become "thicker."

Effects on the Singing Voice.—Of the ten singers included in the series, nine were amateurs and one professional. All the amateurs stated that their voices had improved as a result of the operation; not only had the voice become stronger and clearer, but it could be sustained for a much longer time without any feeling of strain. They all stated that they could change from one register to another as easily as before, and in no case was there any diminution of range of the voice or impairment of its quality. None of them experienced any additional difficulty in taking high notes. The professional singer, who had undergone the operation a year previously on account of repeated attacks of tonsillitis, expressed herself quite satisfied with the result, except that the voice occasionally cracked

on taking high notes. This, however, she attributed to want of practice, as she had not been using her singing voice so much as formerly. Her voice, she said, had lost none of its richness or clearness, and she could change registers as easily as formerly. Her friends, she added, agreed with her on all these points. Examination of her throat showed that the tonsillar fossæ were obliterated on both sides, on account of the anterior pillars having become fused to the anterior surface of the posterior pillars. The latter were practically normal in appearance, save for some slight

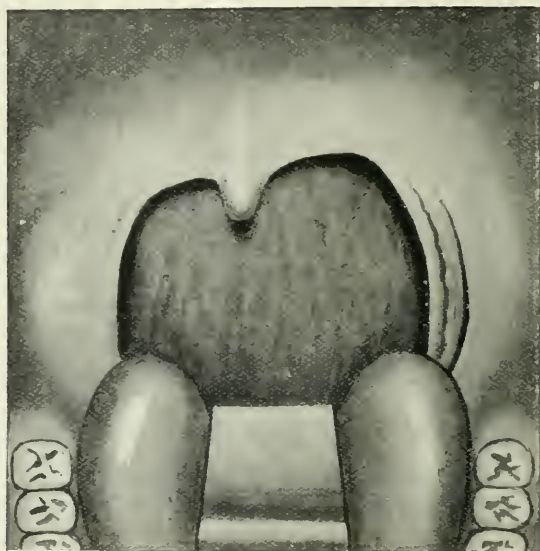


FIG. 1.—Fusion of anterior and posterior pillars; slight pulling down of right side of soft palate.

vertical contraction on the right side, which had produced a little lowering of the soft palate on that side (Fig. 1).

Physical Condition of the Throat.—In all, ninety-eight separate enucleations had been performed, some of the patients having had only one tonsil removed. Of these ninety-eight operations eighty-four were found to be complete enucleations, whereas in fourteen cases a small piece of the tonsil was found still *in situ*, either near the centre of the tonsillar fossa, or in its lower part. In no case had the upper pole of the tonsil, containing the supra-tonsillar fossa, been left. This probably explains the fact that in only one of these cases was there any return of symptoms after the operation.

Healing of the wound after enucleation takes place by organisa-

tion of the blood-clot; the granulation-tissue is converted into fibrous tissue, with more or less cicatricial contraction. The final healing may occur in one of three different ways:

Firstly, by a flattening out of both faucial pillars against the lateral pharyngeal wall, with more or less complete obliteration of the tonsillar fossa. In these cases there is usually marked vertical contraction at the site of the operation, the soft palate passing almost directly on to the margin of the dorsum of the tongue posteriorly. This result was observed in forty-one of the ninety-eight operations (Fig. 2).

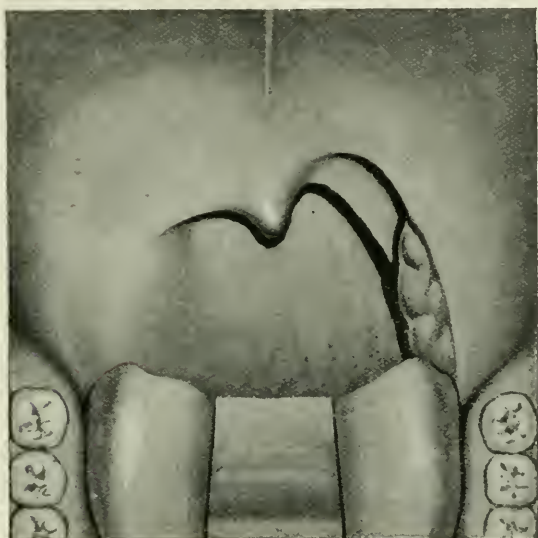


FIG. 2.—Flattening out of both faucial pillars against the lateral pharyngeal wall and depression of right half of soft palate.

Secondly, one of the pillars may be left and the other become fused to its surface. In these cases also the tonsillar fossa is obliterated, but there is not so much vertical contraction (Fig. 3). In thirty-six of the cases the anterior pillar was flattened out, and just seen as a scar (Fig. 3), running downwards and outwards on the anterior surface of the posterior pillar, which was retained. In three cases the posterior pillar was similarly fused to the anterior. In two cases the posterior pillar was tacked to the posterior pharyngeal wall.

The flattened-out depressor muscles in these cases are, of course, not destroyed, and can usually be seen acting underneath the cicatricial tissue on making the patient phonate.

Thirdly, the most satisfactory way in which final healing may occur is by retention of both pillars and fossa. This result was obtained in eighteen instances, in eleven of which there was practically no scarring to be seen; the palatine arches stood out in their original form, and the fossa was deep (Fig. 4). In the remaining seven the pillars did not stand out quite so prominently and the fossa was consequently shallower. It may be mentioned that five of the patients in whom this good result was obtained were singers. In the other five singers healing occurred either by the first or the second of the above methods. Most of the singers

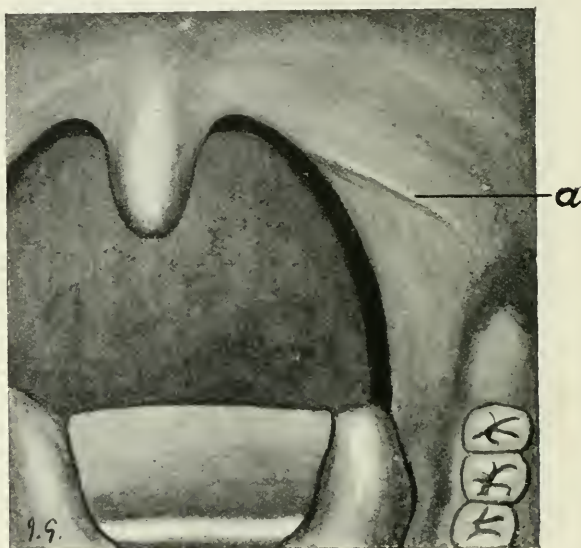


FIG. 3.—*a*. Anterior pillar fused to posterior pillar.

rested their voices for a few months after the operation, so that there was no evidence in support of the view that the early use of the singing voice assists in maintaining the integrity of the parts by constantly stretching them and thus diminishing the cicatricial contraction.

Other points noted were: lowering of the soft plate on one or both sides in thirty-four cases; marked asymmetry of the palate with deviation of the uvula from the middle line in nineteen cases; raising of the palate from injury to the palato-glossus and palato-pharyngens in two cases; ridging of the mucosa of the posterior pharyngeal wall in one case, and the presence of cicatricial bands with pockets between in five cases. In a patient not included in

this series a return of symptoms occurred from retention of food and its subsequent fermentation in one of these pockets.

The pathological condition of the tonsil, for which the operation was performed, does not seem to influence the final result to any extent, as two of the best results were obtained in cases where there had been repeated attacks of suppurative peritonsillitis.

In conclusion, it may be stated that the final result in this operation seems to depend chiefly on great care being taken during its performance to avoid injury to the delicate structures which lie in relation to the tonsil. The first scissor-clips must be made well internal to the edge of the anterior pillar, and the operation must

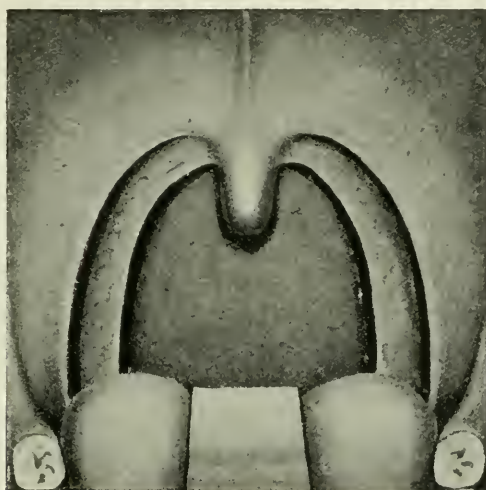


FIG. 4.—Anterior and posterior pillars along with the tonsillar fossa preserved after enucleation.

not be completed with the bistoury or snare until the tonsil is practically fully shelled out, and only attached at its lower pole and by mucosa posteriorly.

The physical results of this operation seem as yet far from being perfectly satisfactory, and one would still be inclined to advocate tonsillotomy in preference to tonsillectomy in the case of professional singers and public speakers, if this operation were possible, and if the tonsil were not seriously affecting the general health by its septicity. Hudson Makuen recommends removing the tonsil and leaving its capsule in these cases; thus avoiding injury to the delicate pillars and superior constrictor. Not only would it be extremely difficult to remove the whole tonsil in this

way, but the hæmorrhage would make the operation unusually severe.

I wish to express my thanks to Dr. Logan Turner, who kindly allowed me to use his clinical material in carrying out the foregoing observations.

III.

A CONSIDERATION OF THE RESULTS OBTAINED IN A SERIES OF FIFTY CASES OF SUBMUCOUS RESECTION OF THE NASAL SEPTUM.

BY J. BURT-HAMILTON, M.B., Ch.B.,
Clinical Assistant, Ear and Throat Department.

In order to ascertain the effect of the submucous resection operation performed upon patients suffering from nasal obstruction a large number were asked to report themselves. As only fifty responded, the following observations are made from an examination of that number. The majority had been operated upon three and four years previously; none were examined within a period of twelve months from the date of the operation.

The cases, which were in no sense selected, are considered here from two points of view: first, as regards the effect of the operation upon the patient's previous symptoms, and secondly, as regards the appearances which the interior of the nose presented on examination. With regard to the first point, two groups of cases could be differentiated, namely, those in which the result was functionally *very good*, the nose being physiologically a normal organ, and those in which some slight and occasional disability, such as temporary obstruction from swelling of the inferior turbinals or slight crusting, occurred—defects, however, which were clearly outweighed by the obvious improvement which the operation had brought about; the results in the latter group were classified as *good*. The objective appearances were placed under similar heads; the results were *very good* in those in which the septum occupied the mesial plane, without perforation; further, there was an absence of crusting, no excess of secretion, and no enlargement of turbinated bodies. In the cases classed as *good*, the imperfection which existed was due to the fact that a little more cartilage or bone might have been removed, to the presence of a perforation or to some turbinal hypertrophy. If a strict standard had not been set

up, many of the cases in this group might justly have been classed as very good.

If we examine the functional results in the first instance, we find that out of the fifty cases, twenty-seven can be classified as very good, twenty as good, two as bad, and one apparently remained in the same condition as before operation. It is interesting to note, however, that all the cases characterised as functionally very good, could not be placed in the same category from the surgeon's point of view, that is to say, as regards the appearance which the septum presented on examination. Thus of the group of twenty-seven, only fourteen, or 51 per cent., were regarded as structurally very good. A perforation, or the remains of a spur or small ridge, prevented the rest of these cases from being placed in the first class. There is ample evidence, therefore, that it is not necessary to obtain a perfect result surgically in order to give the individual complete relief from nasal discomfort.

Again, if we examine the twenty classified as functionally good, we find that some defect in the respiratory function of the nose was due to a fault in the septum only in seven cases. In the remaining thirteen we were prevented from placing the patients in the first class owing to an intermittent or more or less constant obstruction due to turbinal turgescence or hypertrophy. We are justified, therefore, in claiming for the septal operation an excellent functional result in forty of the fifty cases operated upon—that is, in 80 per cent.

It is obviously necessary, therefore, to take into consideration the condition of the inferior turbinated bodies in a considerable number of cases of deflection of the nasal septum. In dealing with cases of nasal obstruction due to this cause, it is now our practice to remove any undue enlargement of the turbinal either at the same time as the septal operation or shortly afterwards. On the other hand, in cases in which the enlargement is slight, we prefer to delay further interference for several weeks or even longer, as in some cases it is found that no further treatment is necessary. In sixteen cases in the series in which the notes definitely stated that the inferior turbinates were enlarged prior to the operation upon the septum, eight were found at the time of this inquiry to be no longer enlarged and required no treatment. In six of the remaining eight they were evidently *in statu quo*, and still causing inconvenience to the patient, while in two, although enlarged, no discomfort was complained of.

There still remain three cases in the series which have not been

placed in either of the two groups above dealt with. In two the results have been classified as bad because of the crusting and bleeding which occurred, though in both the breathing had been much improved; in one of them occasionally a whistling sound was produced. The third patient was still a month-breather, although the septum is now straight. He has a high palate and turbinal enlargement.

POST-OPERATIVE PERFORATIONS.

Of the fifty cases in the series, twelve, or 22 per cent., showed a *perforation* in the septum. The perforations have been classified as small, of moderate size, and large. Some were in the anterior part of the septum, and others far back. In five of the cases not only was the functional result as regards the breathing very good, but there was no crusting, and the patients were ignorant of the fact that anything of the nature of a perforation existed. In a second group of five, four complained of a little crusting, and one had slight bleeding from the nose when the crusts separated. In the remaining two there was a good deal of crusting and bleeding, and one patient complained of a whistling sound at times. This is the only case in which that symptom was noted, though all the patients with a perforation were questioned on this point. In three of the cases, all of traumatic origin, *adhesions* had developed between one side of the septum and the outer wall of the nasal cavity: in two the synechiae were attached to the middle turbinated body and in one to the inferior turbinal. These bands were found on what was previously the convexity of the septum, and were evidently the result of injury to the mucoperichondrial and mucoperiosteal flap. They did not appear to give rise to any inconvenience. The routine practice after the septal operation is to pack the nose on both sides for twenty-four hours with a strip of gauze. After its removal no further packing is used.

The effect of the operation upon the *shape of the nose externally* was only noted in four instances. In three a decided improvement had been observed. The mother of one of the younger patients expressed the opinion that her son's nose appeared "thicker" than formerly. In no case was any complaint made that the nose had "fallen in."

CASES OF TRAUMATIC AND NON-TRAUMATIC ORIGIN.

An attempt was made, in the first place, to compare the

functional results in these two groups, and in the second place, to note whether the surgical result was better in the one class of case than the other.

In nineteen a definite history of injury to the nose was obtained ; in thirty-one no trauma was attributed as a cause. It must be understood, however, that the history is not always reliable on this point. The numbers are not large, and therefore no general deductions must be drawn from them, but it was obvious that the purely operative result was better in the non-traumatic than in the traumatic class. Seven of the twelve perforations occurred in the latter, and, as already stated, the three cases with synechia belonged to this group. In more than one also a bony ridge had not been completely removed. It is not unnatural that this should be so when we remember the marked displacement of the septum which is met with in some cases of injury. It is specially interesting, however, to observe that in spite of the surgical defects in the cases of trauma, very little difference is apparent in the functional results in the two groups. In all probability the patient who has suffered from very considerable nasal discomfort as the result of a traumatic deflection of his nasal septum, at once experiences so much relief after operation, that any flaw as the result of the surgeon's faulty technique is hardly appreciated. In this class of case, also, the deflection is often the only pathological condition present, whereas in the non-traumatic cases it may constitute a part only of the general nasal trouble, the inferior turbinals being often a concomitant cause of imperfect nasal respiration.

THE EFFECT OF THE OPERATION UPON OTHER SYMPTOMS COMPLAINED OF.

Headache was complained of in three of the cases of the series in addition to the respiratory difficulty. In two it entirely disappeared, while in the third the headache was both less frequent and not so severe.

Sneezing was a prominent symptom in four cases. In two the attacks have been cured, in one they are much less frequent, and in the fourth they persist in the same way as before.

Cough was a persistent symptom in a young girl. With the establishment of nasal respiration the cough has disappeared.

Asthma was complained of in two cases. In one the average number of severe asthmatic attacks in the year was six. When examined sixteen months after the operation the patient stated that

he had only had one attack during that time. In the other case, examined three years after operation, the asthma had recurred less frequently during the first two years, and during the last twelve months there had been no attack. Speaking generally, our experience with regard to the remedial effect of the submucous operation in cases of asthma has not been very satisfactory.

I wish to acknowledge my indebtedness to Dr. Logan Turner for his assistance in the preparation of this paper.

SPECIALISTS AND SPECIALIST EDUCATION IN AUSTRIA-HUNGARY.

By DR. HUGO FREY,

Docent of Otology at the L.R. University of Vienna, Chief Ear Surgeon at the
"Kaiser Franz Joseph Ambulatorium and Hospital."

It was in the middle of last century that medicine began to develop and also to be divided into special branches, and it was in Vienna where at this time laryngology was founded by Türck and Czermak. The work of both these men and their successful followers, Van Schroetter, Stoerk and Chiari, was devoted to research of rhino-laryngology solely, whereas it was Politzer, assisted by Gruber and later by Urbantschitsch, who laid the foundation of scientific otology in our country. This latter science as a special branch had already been known and successfully inaugurated in other countries, especially in England by Sir Joseph Toynbee and others (*vide* Politzer's "History of Otology," vols. i and ii). Rhinology, of course, could never be completely separated from otology, and has always been practised by otologists as well as by laryngologists; the scientific research work on this field, however, has been carried out almost exclusively by laryngologists. This is the reason why up to the present day otology and rhino-laryngology are considered in our country as separate branches of medicine, and why they are practised and taught at different places, whilst at other schools they are often found combined. In practice we see that otologists as well as laryngologists do rhinological work, but the combination of all three branches is rarely met with here.

It is the desire of every ambitious specialist in our country to be able to obtain hospital cases both for practice and didactic purposes. For many years the university clinics of the "All-

gemeines Krankenhaus" in Vienna were the only places where hospital and out-patients could be obtained as object material for teaching purposes and practical study. In proportion to the growing number of assiduous young specialists this has so far been changed, and a number of similar institutions have been called into existence in the shape of rhino-laryngological and otological departments at several hospitals. There are almost a dozen of specialist departments at our chief hospitals; some of them being institutions for out-patients, others being provided with beds. At the time when there were but few specialists in our country their position as consulting surgeons was an established one merely by the fact that they held a position as university teachers. Both the public and the general practitioners considered this the best legitimate proof of their capabilities.

Even nowadays it is almost indispensable to be connected with the university or to hold a leading position in a hospital in order to attain full specialist rank in the eyes of the profession and the lay population.

It must, however, be remembered that the constitution of our universities is very different to that of England; the medical schools form as "Medicinische Fakultät" an essential part of the universities.

Every university has a hospital of its own or makes use of an already existing hospital for educational and clinical purposes. The name of "clinic" is only used for those hospital departments which officially stand under the supervision of the university, whilst all other are simply denominated as "sections" ("Abtheilungen").

The number of university clinics in our speciality is a limited one. There are seven universities altogether in Austria; four of these are German, namely Vienna, Prague, Graz, and Innsbruck; one is Bohemian in Prague, and two are Polish in Krakau and in Lemberg. Hungary has two universities, one in Buda-Pest and one in Kolosvar. In Vienna we have one otological and one rhino-laryngological clinic; Prague has the same, and in the other places mentioned these branches are either united at one clinic, or only departments for out-patients are provided for.

The directors of these clinics are appointed by the State upon the recommendation of the university. They are under the obligation to teach, and enjoy the title of "Professor." In order to secure a rising generation of "teachers" to our universities a special grade has been instituted, namely, that of "privat Dozent."

This title also carries with it the right of teaching. After some time has elapsed a number of privat docents are, as a rule according to their merits, distinguished by the title of "professor extraordinary." The appointment of a "privat docent" is conferred by the Minister of Public Education following upon a proposition by the board of professors. It is only given to such as have proved their capabilities during many years of clinical practice and by a number of publications of original research work. As a rule these appointments are only obtained by the senior assistants of a university clinic. Here it must be pointed out that even this first step on the upward path, the position of first or senior assistant of a university clinic is not very easily reached, as there are always a number of junior assistants at every clinic among whom the director is free to choose his seniors, which he does by carefully considering their abilities and time of service. The senior assistants, who are very often called upon to act for the professor in governing the clinic and in lecturing for him, acquire thus a considerable amount of practical and theoretical experience. The demands made on them in both cases are very high.

From the reasons just discussed it becomes obvious that the position of senior assistant and more so that of privat docent or of professor extraordinary recommend the bearer highly in his speciality, and that they are the first to be considered if any vacancies occur, as directors of a clinical or a hospital department. There are almost a dozen specialist departments at our chief public hospitals, some of these being only institutions for out-patients, others being provided with beds.

The directors of these clinics, exercising their privileges as university teachers, are now able to utilise their own hospital material for teaching purposes. In this manner other hospitals than those belonging to the university can be utilised for the educational purposes of the university. As in everyday life titles such as "professor," "docent," etc., are always used when addressing a person, the general public is kept informed of the degree any doctor holds, and in this way know him to be a specialist of qualification. In this manner a number of first-class specialists are created. Notwithstanding these circumstances there always have been, and still are, some men who without a university position have risen to the first rank among specialists by reason of their scientific and personal qualities, but even these have almost exclusively received the education of a senior assistant at a university clinic.

To give a short *resumé*: Up to the present a class of leading specialists of a high scientific standing has been formed from those men who hold university or hospital positions. Within the last years, however, the increasing population and the expansion of specialist methods of treatment have created perhaps a greater demand and certainly a greater production of specialists. The question has arisen whether one should not try to give those specialists who do not belong to any of the already mentioned groups a title or degree different from the general practitioner's, so as to secure to them a certain standing before the public and the general practitioners. No satisfactory answer has yet been found to this question, mainly for the following reason:

The only degree which entitles one to practice medicine in our country is that of "doctor universæ medicinæ"; it is therefore free to everyone to declare that he is going to restrict himself to one special branch only, so that every "doctor universæ medicinæ" is able to declare himself a specialist. This we cannot prevent. Even introducing an additional title or degree (not that of *privat docent*) which would be accessible to every doctor by passing an examination or by some other similar means would not improve the situation. I am strongly of the opinion that a new specialist degree would only result in an over-production of specialists quite out of proportion to the actual demand, and a position which is to-day only reached by many years of work and an established reputation would then be accessible to all by means of an examination. We all know how examinations are passed and that they hardly ever prove the real knowledge of a candidate. Even should one—as has been proposed—make the specialist degree dependent on a certain period of practical work certified by a testimonial, this would still be putting far too high a responsibility on to the shoulders of those signing the certificates.

The objection could not be raised that the title of *docent* is gained in a similar way. The examination ("colloquium") which candidates to the title of *docent* have to pass is only *one* act of the whole procedure. The scientific work, etc., of a candidate is considered in the first place, and nobody is ever appointed whose entire personality, character and abilities are not well known to the university authorities.

Experience shows that there were always specialists who without special denomination are professionally much occupied. This fact proves that new titles would not improve the position of any specialist, but most probably deteriorate the standing in general.

I do not know the conditions in England sufficiently well to permit of my forming a definite opinion, but it is known to me that titles such as "professor," etc., are not generally used, and I therefore cannot see how a special title could be used for the distinction of specialists in England. If I therefore come to the conclusion that in this rather superficial matter of titles nothing should be altered, I still adhere to the opinion that there could be different improvements made regarding the specialist education. The teaching of our speciality will certainly always be more a dominion of post-graduate work, as the medical student has to attend to too many other subjects. According to our regulations every medical student has during his clinical training to hear either a six weeks' course of lectures in both otology and rhino-laryngology, or he is free to attend a course of lectures on both subjects spreading over a whole term. In the first case one hour daily must be applied to each of these subjects; in the latter the number of hours must amount to at least thirty in each term for each subject. But there are no examinations held on those subjects, and hence one depends entirely on the goodwill of the student whether he acquires any knowledge in these classes or not.

It might be said, however, that our students show great interest in this work, and that they attend very assiduously both the lectures and the practical demonstrations. As most of the professors and docents in our branches give such lectures for students, the number of students in each class is never so large that the practical instruction could suffer. We endeavour to teach the students only that which might be of importance to them in general practice, and to make them well acquainted with the methods of examining patients, and with the principles of diagnosis and treatment of often occurring diseases, and to attract their attention to the important relation between specialities and general medicine. The beneficial results of this instruction can be seen almost daily. The younger generation of practitioners now hardly overlook those special symptoms and indications which very often had escaped medical attention in former times and had come too late under specialist care.

Whilst the student's education in our branches is necessarily of a more general character, in that of the post-graduate we try to go into details as far as possible. The fact is sufficiently known that the post-graduate classes in our branches had been started in Vienna before any other place. It was here where Politzer began his classes in otology, first in his out-patients' department, and since

1873 in the University Ear Clinic, which actually was the first ear clinic ever founded in the world. His system of teaching, based upon the principles of the great clinical masters of the old Vienna school, is still followed out by his successors and pupils. Its first aim is to treat practical things practically. Not by long didactic lectures but by continual demonstration, we insist on the pupils getting entirely familiar with the details of examination and most exact analysis of the endoscopic pictures, and after this the other methods of diagnosis such as functional tests and so on and the treatment are dealt with always in connection with facts of normal anatomy and physiology. As we cannot give our own experience to our pupils, we try to show them the way how to acquire and to use their own. In the last decade post-graduate instruction has been divided into different courses: (1) Clinical diagnosis and treatment; (2) functional tests especially; (3) bedside work on surgical cases; (4) surgical practice on the cadaver; (5) practical treatment and minor operations in the out-patients' ward; (6) demonstrations and lectures on normal and pathological anatomy, histology and physiology. Within the last few years special work on diagnosis and pathology of labyrinth diseases has been added.

These classes are meant, in the first place, for young men who want to devote themselves to the specialist practice, or such specialists of experience who in smaller towns, remote from scientific centres, desire to refresh and improve their knowledge, and in both cases they seem to be of great success. The number of students is on the average not larger than ten in a class, so that an absolutely individual instruction is given. Some of them are frequented with profit by the general practitioners or specialists of other branches (general surgeons, neurologists, and so on) who desire a more complete knowledge of our speciality than their student's training gave them. But even this class work alone is not to my mind a sufficient education for a fully competent specialist. What he still needs is at least two years' practical work in a clinic or hospital department under the supervision of a high-class scientific specialist.

The chief surgeon of such a department should always remain conscious of the high responsibility regarding the education of his assistants and juniors. If in the elementary training of specialists practical work and demonstrations mean everything, the theoretical side of our discipline must be given the utmost attention in the instruction of the advanced. The study of the theoretical doctrines should not be left to the goodwill or discretion of the men but

should be controlled by the chief. They should carefully and exhaustively study the normal and pathological anatomy, histology and physiology which they have to deal with in their practice. It will not be found sufficient to acquire a formal knowledge by reading and studying museum specimens; the novice ought to try to gain original ideas on those topics and to be actually at home in them. The best way for them is to do original research work. I personally think it is one of the highest aims of a chief to lead his pupils on the way to such work. The argument should not be raised that more than enough literary productions exist; even papers of a minor importance are often welcome if they confirm to some extent doubtful facts or theories, and they will always be of inestimable value for the young authors, whose power of observation and whose feeling for scientific responsibility will be greatly increased. It is not mere therapeutic themes which should be selected to work upon; not much is taught by these, unless they concern unusual improvements. It is in the dissecting rooms and laboratories where the young specialist should win his first spurs. Out of this kind of work the great practical progress is born.

Politzer's great success in finding the air-douche treatment was in consequence of many years' physiological study. The latest developments in labyrinth surgery had to be prepared by decenniums of anatomical and physiological work. Thus adding to a solid practical a thorough theoretical education, we will finally lead our young men to the highest standard of complete and independent specialist practice, and raise workers, who in their turn will lend actual help to the progress of our science.

SOCIETIES' PROCEEDINGS.

ROYAL SOCIETY OF MEDICINE.—OTOLOGICAL SECTION.

February 16, 1912.

DR. W. MILLIGAN, *President, in the Chair.*

Abridged Report.

Severe Labyrinthine Vertigo (Ménière's Disease?); Operation; Recovery.—W. Milligan, M.D.—Patient, male, aged forty. Sudden attack of vertigo, accompanied by sickness, tinnitus, and complete loss of hearing upon the left side five years previous to admission to hospital.

During the past five years attacks of vertigo have increased in severity. Admitted to hospital on account of constantly recurring attacks of vertigo, tinnitus, and sickness. General health good; heart and lungs normal; no arterio-sclerosis. Urine normal. Left ear: Complete deafness. Tuning-forks not heard upon left side—referred to right ear. Marked Rombergism. Caloric test (cold water, 20° C.): Nystagmus induced in seventy seconds. Operation (July 20, 1911): "Bridge operation" performed: prostration for twenty-four hours, then improvement and cessation of sickness. July 30: Vertigo relieved; tinnitus about the same. January 29, 1912: Patient expresses himself as perfectly well. No vertigo or sickness since operation. Tinnitus still present, but not nearly so loud. Left ear absolutely deaf. Caloric tests: No reaction upon affected side; upon healthy side reaction induced.

Suppurative Labyrinthitis, complicated with Suppurative Basal Meningitis; Operation; Translabyrinthine Drainage; Death.
—W. Milligan, M.D.—Female, aged thirty-six, deaf-mute. Scarlet fever two and a half years. Left ear suppurated since. Admitted to hospital on account of increased vertigo and facial paralysis of three days' duration. Left ear: Large perforation; cholesteatoma (?); very fetid discharge. Caloric tests negative; no fistula symptom. Right ear: Caloric tests—Blood-count: Leucocytes 6000. For the first four days after admission patient apparently well; upon the fifth day temperature 100° F.; discharge from ear profuse and foul. Temperature next day 101° F. Following day patient became suddenly unconscious; temperature 101.4° F.; severe vomiting. November 27, 1911: Lumbar puncture; fluid turbid and under high tension; no organisms. Complete post-aural operation performed: Cholesteatoma found; facial nerve exposed; external semicircular canal black, necrotic, and perforated, admitting the point of a Dundas Grant's antrum hook. Removal of internal ear and opening up of internal auditory meatus. Dura mater incised; escape of about one teaspoonful of pus and cerebro-spinal fluid. Translabyrinthine drainage instituted. November 28: Consciousness returned. Temperature fell to 99.6° F.; pulse 70. Lumbar puncture: Fluid turbid, large coagulum; albumen increased; increase of polymorphonuclears: diplococci in films. November 29: General condition improved. December 5: Headache. Temperature, 102.8° F. Lumbar puncture: fluid turbid and under high tension; no organisms. Attack of acute otitis media upon right side. December 9: Sharp attack of diarrhea (septic?); mastoid wound appears healthy. December 11: Temperature rose suddenly to 103° F.; slight head-retraction. December 14: Condition unsatisfactory: 40 c.c. of cerebro-spinal fluid withdrawn: turbid; excess of polymorphonuclears; no organisms. Opening towards base of brain enlarged; opening in dura also enlarged and double drain inserted. December 16: Condition improved: conscious; pulse good. December 17: Rise of temperature to 102.6° F. December 19: Lumbar puncture. Fluid almost clear; polynuclear leucocytes; no organisms. Blood-count, 7000 white cells. December 30: Patient going on well; conscious. January 9, 1912: Not so well; temperature normal. January 10: Temperature, 101.6° F.; patient semi-conscious. Lumbar puncture; fluid almost purulent and full of staphylococci and streptococci; profuse perspiration and flushed face. Sudden maniacal symptoms, coma and death. Autopsy: Brain cedematous; extensive basal meningitis, and, upon left side, a large amount of free turbid fluid. Brain opposite internal auditory meatus coated with thick purulent

exudate. Opinion invited as to whether in such a case it would be advisable, in addition to transabyrinthine drainage, to perform an extensive decompression operation.

Three Cases of Operation on the Labyrinth for Vertigo (Non-Suppurative).—Hugh E. Jones.—CASE 1: Male, aged forty, out-patient, March 22, 1907.

History: Deaf ten years; last three weeks has had severe continuous vertigo. Had giddiness also nine years ago. Had discharge from left ear for five years, ending nine years ago. More or less light-headed ever since. Condition: Post-nasal catarrh; left tympanum disorganised (?); and membrana tympani cicatricial. Hearing: Watch—right, *nil*; left, *nil*. Tuning fork, B.C.—right, *nil*; left, *nil*; A.C.—right, ?; left, ?. Voice—right, very loud close to ear; left, *nil*. After treatment with potassium iodide, etc., on June 20: Complete post-aural operation. Left external semicircular canal opened and curetted up to the ampulla; vestibule not curetted. July 24: Discharged. During the ensuing year the patient was very much better, but never admitted that he was wholly free from giddiness. June 4, 1909: Return of giddiness; granulation over the external ampulla. June 18: Cavity completely healed again. August 13: Caloric test—hot water, no nystagmus either side; cold water, right, no nystagmus; left, five or six slow movements. Remarks: I have not been able to determine the cause of the deafness, but it seems suspiciously like a syphilitic case. The result of operation seemed to be at first a definite improvement. This was not admitted by the patient, but all who saw him walk said that he was much steadier.

CASE 2.—Male, aged about forty to forty-five. History: Buzzing in left ear for ten years. Ménière's symptoms seven or eight years ago. Slight dizziness at intervals ever since. Buzzing and hearing are worse for two or three days before an attack. Attack lasts about three hours; everything goes round in a vertical plane. Never falls, but has to lie down. November 30, 1908: Membrana tympani normal; good mobility. May 13, 1911: During the interval of two and a half years several slight attacks had occurred, but during the last few weeks the deafness had been increasing, the tinnitus had been constant and annoying, and several minor attacks of the Ménière type had occurred. On May 12 a violent attack of dizziness and vomiting. Hearing: Acoumeter—right, 10 ft.; left, 3 ft. Tuning-fork—Weber, equal. B.C., right—5 seconds; left, —15 seconds. Rinne—right, positive; left, positive. Galton—right, 0.2 mm.; left, 1.4 mm. Ten seconds difference between the two sides tested against one another. May 26, 1911: Operation—Inner wall of antrum exposed without removing "bridge" or touching the tympanum; external semi-circular canal opened and posterior limb followed, posterior and superior canals burred away, vestibule not entered. Tympanum and vestibule were not interfered with because hearing was relatively good. After-history: No reaction or shock, no vomiting or spontaneous nystagmus. Dizziness on sitting up or moving head suddenly. Stitches and drain removed fourth day. Tinnitus unaltered. Recovery uneventful. February 6, 1912: Caloric reaction was then negative on operated side, positive on the other. Patient has been quite well since convalescence was completed in July last.

CASE 3.—Female, married, aged thirty-two. December 13, 1911: Left ear deaf six months; tinnitus one month; giddy attacks twice a day, lasting about three-quarters of an hour. Does not fall, but has to sit or

lie down and hold on to things; vomiting. December 13, 1911: Watch—right, 18 in.; left, *nil*. Tuning-fork—right, B.C., full; left, B.C., *nil*; A.C., $\frac{1}{4}$. Caloric reaction—left (cold) induction, 50 seconds; duration, 90 seconds; right (cold) induction, 70 seconds. January 10, 1912: Superior vestibulotomy. Tympanum not touched, and "bridge" not removed. After-history: Vomiting and dizziness on movement for three days. Tinnitus disappeared from first day. Wound healed by first intention. Patient was able to walk across the ward about the tenth day. Discharged January 27. January 31: Walks unsteadily, with tendency to fall to the left; cannot stand for more than three or four seconds on either foot singly. March 6: Much improved as to gait and tinnitus; no further vertigo and no spontaneous nystagmus.

Labyrinthine Vertigo (Ménière's Symptoms—non-infective) treated by Operation.—G. J. Jenkins, F.R.C.S.—The patient, a woman, aged twenty-four, had previously been shown at a meeting of the Section held in May, 1911, and a report of the case has already been published.

Mr. G. J. JENKINS, referring to his own case, said that before the operation the patient complained of Ménière's symptoms, impairment of hearing (C.V. at 3 ft.) and severe tinnitus. The operation done was the draining off of the perilymph by opening the external semicircular canal without injury of the membranous canal. The patient was very collapsed for a few days after the operation, but gradually recovered, so that in three weeks there was no vertigo, conversational voice could be heard at 15 ft. and the tinnitus was very slight. This improvement has been maintained. Caloric test—cold water—gives very fine horizontal and rotatory nystagmus in both ears, but slightly less marked in left ear. She can now do her ordinary work. Mr. Jenkins referred to the somewhat analogous condition of glaucoma. In glaucoma there are flashes of light, etc., and in a case of Ménière's symptoms there is a similar aberration of the functions of the ear in the tinnitus and vertigo; in glaucoma there is defective vision, and in Ménière's cases there is defective hearing and also defective vestibular sensibility; in glaucoma there is often nausea and headache and also similarly in cases with other Ménière's symptoms.

Mr. RICHARD LAKE said it was difficult to lay down principles on which to operate. His first case was that in which most hearing was preserved, and in that he did not destroy the vestibule. He could not understand an increase of fluid in a bony compartment. In his own cases there was no increase of fluid; yet in view of the short duration of Mr. Jenkins' case it was possible that there was a hyper-exudation of fluid. The operation more applicable for such cases would be Neumann's, *i. e.* to open the posterior canal instead of the external.

Mr. C. E. WEST cautioned his hearers against regularly operating for non-suppurative labyrinthine vertigo; for a large majority of those cases under dieting and medical treatment would get well without operation. Years ago he thought that if one waited one would be obliged in the long run to operate on many of these cases; but he had not yet met one case in which he had been forced to do so. He admitted, however, that the results in these cases were satisfactory. A few days previously he heard of a case in a gentleman, aged fifty, whom he saw last May, and who was incapacitated at that time by violent recurrent vertigo. He did not press operation upon him, but placed it before him as a last resort if he did not get better. That day he heard that the patient had not had

an attack since last July. Judging by cases in which the labyrinth was suddenly broken up, by disease or by operation, he would have had a long period of inco-ordination and helplessness and would have lost hearing in that ear, whereas now he had very useful hearing. The wise attitude was that of a reluctance to operate.

Dr. WESTMACOTT said it would be interesting to know when the operation should be done and when it should not. Some of the cases were very severe, and, especially in brain workers, prevented the following of the occupation.

Mr. A. L. WHITEHEAD said that his own experience was that one could not hold out hopes of stopping tinnitus by opening the labyrinth.

Mr. MACLEOD YEARSLEY asked what was the condition of the patient afterwards. He had twice operated for severe vertigo. The first case was that of a clergyman, who was practically stone deaf in both ears, and had very severe tinnitus, on account of which he was beginning to threaten suicide. He also had severe vertigo, which quite incapacitated him. He (the speaker) destroyed completely the vestibular apparatus on the left side, as well as the cochlea. There had been no vertigo or tinnitus since, but he complained that he could not find his way in the dark. If he got out of bed in the dark he lost his bearings, collapsed on the floor and had to wait until morning, or until his cries for help brought someone with a light. On one occasion he turned out his study lamp before leaving his study and was completely lost: he could not even find his way to the bell. That symptom was now gradually getting better. The second case had normal hearing on the opposite side and suffered from incapacitating vertigo. As to her condition when in the dark, she said that was her greatest trouble. Although she might know the way was straight in front of her she could not imagine a clear space round her, and she felt lost and did not know what to do. In consequence of these cases he recently made inquiries among congenitally deaf boys, whose vestibular apparatus apparently did not function, as nothing could make them giddy, and they did not respond either to caloric or turntable tests. They had no trouble whatever in finding their way in the dark. The question occurred to him whether, in these congenital deaf cases, the muscular sense took the place of the vestibular sense, and whether in the adults on whom he had operated the muscular sense had had no opportunity as yet of adapting itself to the altered circumstances.

Dr. H. J. DAVIS thought that if there were disease in both ears nothing should be done, especially if the patient was old, as it was difficult to say in which ear the vertigo originated.

Mr. SYDNEY SCOTT confirmed the views expressed by Mr. West, that few patients with vertigo should be operated upon. He had only operated on three cases of non-suppurative labyrinth vertigo. It was curious that tinnitus so often persists, even though the whole of the cochlea is destroyed.

Mr. C. E. WEST wished to correct in one particular the remarks he had made, as he had had one case, that of a woman the whole of whose labyrinth he extirpated. She became maniacal from shock and giddiness, but finally got well.

Mr. JENKINS thought that if a comparatively slight operation would relieve the patient there seemed no reason why it should not be done. He held that there might be an increase of labyrinth pressure without increase of fluid.

Mr. HUGH JONES agreed as to the caution required in deciding to do an operation such as that under discussion. In his second case he did

all he could to avoid operation. Since the operation the patient had been able to follow his occupation. In the last case he confessed to some doubt as to whether the operation ought to have been done or not, not because of the result. But he believed two or three years or even longer were required before a patient was entirely free from attacks. It was yet too soon to say what the ultimate result would be, but she was very much relieved. With regard to the first case the man had been having attacks for ten years, and as he could not do his work he insisted on having something done. As to the cure of tinnitus he thought something would depend on the extent of the operation—operation on the semicircular canal alone seemed insufficient.

The PRESIDENT (Dr. W. MILLIGAN) said that Mr. Jones, Mr. Jenkins and himself fully realised the risks and the severity of the operation even when done with the utmost care. Still, there were cases which orthodox treatment did not benefit. He did not think that he had done more than eight of these operations altogether—an infinitesimal number compared with the number of cases he had seen. In some of the cases he had operated upon medical treatment had been tried for years. With one exception all his cases had been hospital patients, who otherwise were in good health, but who were compelled to make a living, and could not do so when they had to stand on walls, ladders, etc. With those precautions he did not think any critic, however severe, would take up the attitude that an operation should not be performed, even though risky. In none of his cases had the tinnitus been entirely relieved. But the vertiginous symptoms were cured, and the patient was enabled to follow his occupation once more.

Severe Streptococcal Infection of both Ears, etc.—George N. Biggs, B.S.—Patient had a slight cold, followed by pain in both ears. The pain rapidly increased, and when I saw him he was looking very ill. Temperature, 104° F.; pulse, 110 and irregular. Severe frontal headache and vertigo. Both tympanic membranes were found to be bulging and dark blue in colour; no mastoid tenderness, etc. Both membranes were incised and a culture taken, in order that a vaccine might be prepared. By midnight his temperature had fallen to normal. Next day there was tenderness over the right mastoid and right-sided headache; temperature, 103° F. His right mastoid was opened, and the cells and antrum were found to be filled with the same sanious fluid that had escaped when the tympanic membranes were incised. No pus. He was given an injection of polyvalent serum. After operation temperature fell, but next morning it again began to rise, the left ear became painful, and with marked tenderness over the left mastoid, severe headache, and temperature 102.2° F. His left mastoid was therefore opened, and although the cells contained sanious fluid, the antrum contained pus, showing that he was beginning to react locally to the infection. He was given an injection of autogenous vaccine, the organism having proved to be pure streptococcus. He improved slightly during the next three days, but on the fourth day his temperature rose to 103° F.; the headache returned, but was now frontal; at the same time he complained of pain in the throat and nose, and both sides of the septum, the inferior and middle turbinal bones, the posterior wall of the pharynx, the tonsils, palate, and pillars of the fauces were extensively ulcerated. A culture taken from the nose and throat showed streptococcus again in pure culture. With the usual local treatment and injections of vaccine at intervals the condition sub-

sided, but at one time I feared that the accessory sinuses of the nose would become involved. Recovery with practically normal hearing.

Thrombosis of the Right Lateral and of the Longitudinal Sinus.—By P. Watson-Williams, M.D.—Male, aged thirty-seven. Patient was admitted on November 27, 1911, on account of a purulent discharge from the right ear for three weeks, and to which he had been subject on and off for five years. Severe frontal headaches before admission. Blood count: Red cells, 3,810,000; leucocytes, 21,477; polymorphonuclears, 63.5 per cent.; haemoglobin, 100 per cent.; small lymphocytes, 29 per cent.; large lymphocytes, 11 per cent.; transitionals, 1.5 per cent.; myelocytes, 0.5 per cent. The temperature was fluctuating between 97° and 101° to 102° F., but there was absence of tenderness or pain over the mastoid. The optic discs were normal. Radical mastoid operation was performed on November 29. The mastoid was infantile in type, and there was no softened area of the walls of the cavity operated on leading in the direction of the lateral sinus or middle fossa. The operation relieved the patient, but the fever persisted. December 7: Temperature rose to 104° F. Operation: the lateral sinus was exposed, being separated from the mastoid antral cavity by a thick layer of hard bone. A peri-sinus abscess was found, and the sinus thrombosed. The sinus was opened up backwards nearly to the torcula, and forwards to the bulb; the internal jugular vein was ligatured above the common facial. No thrombus was found in the vein as far as it was exposed, but it was impossible to remove the clot sufficiently to wash out the vein above through the sinus. Cultures from the peri-sinus yielded Gram-positive streptococci and staphylococci. The patient felt well the next few days, but the temperature remained above 102° F. Up to December 19 he was cheerful and bright, but after that he became mentally dull, and became rapidly weaker, dying on December 21. Autopsy: The sinus thrombus occupied the whole of the longitudinal sinus, extended from the torcula a short way into the left lateral sinus. A leptomeningitis of the upper half of the cerebral hemispheres, which appeared to have been the cause of death, had been set up by infection from the longitudinal sinus. The remarkable features were the absence of symptoms pointing definitely to lateral sinus thrombosis, although it was very extensive; the fact that this thrombosis extended back to the torcula and into the longitudinal sinus, without extending down the internal jugular; and the remarkable absence of mental symptoms, despite the extensive thrombosis of the intra-cranial sinuses.

Peri-sinus Abscess and ? Lateral Sinus Thrombosis.—P. Watson-Williams, M.D.—Male, aged twelve, attended hospital on March 9, 1911, complaining of pain over the left mastoid region, vertigo, tendency to fall from right to left, and objective clockwise vertigo. Lately vomited. History of purulent discharge from the left ear since infancy, and from the right ear for one year. There was a large perforation in the right membrane, and the drum of the left ear had almost disappeared. Spontaneous nystagmus to left; caloric reaction delayed ninety seconds right and left. Fistula symptom not present. The temperature was normal. December 14: severe headache, vomiting, and tenderness behind the ear; vertigo; optic discs showed fulness of vessels; no neuritis. Temperature rose to 102° F., and an immediate operation was performed. On stripping the periosteum from the mastoid, pus welled up through the aperture of the emissary vein. The mastoid

antrum was unusually large, extending $\frac{7}{8}$ in. backwards from Henle's spine, full of pus and cholesteatoma. The lateral sinus was exposed: about $\frac{1}{2}$ dr. of pus escaping from the peri-sinus abscess. The sinus was not opened but it did not pulsate. There was no evidence of thrombosis in the jugular vein. The culture from pus yielded *Streptococcus brevis*, Gram-positive. Recovery.

Lateral Sinus Thrombosis.—P. Watson-Williams, M.D.—Male, aged twenty-four, was admitted to the hospital on November 13, 1911, with a history of pain in the right ear for ten days, headache and rigors. Temperature, 102° to 103° F. The right meatus externus was occupied by a polypus. November 24, radical mastoid operation; the mastoid antrum full of pus. A sinus leading to the lateral sinus—a peri-sinus abscess containing much pus—was evacuated; the wall of the sinus was thickened, but the sinus pulsated. After disinfection of the operation area by free application of spirit lotion containing $\frac{1}{1000}$ perchloride of mercury, a hypodermic needle was inserted and some clot withdrawn, blocking the needle. A second puncture was made, more deeply entering the sinus, and the blood withdrawn submitted to culture. The operation was completed without ligaturing the jugular or opening the sinus. Recovery. The culture of the blood drawn from the lateral sinus yielded Gram-positive staphylococci with a few Gram-positive streptococci, while the pus from the mastoid antrum contained staphylococci, Gram-positive and Gram-negative, but no streptococci. Remarks: The patient had a peri-sinus abscess and a mural clot in the sinus; but though the blood of the sinus was proved to contain staphylococci and streptococci, the patient recovered without untoward symptoms and without ligation of the jugular vein, etc.

Mr. HUGH JONES mentioned a case in which the thrombus extended round to the opposite lateral sinus, and was associated with a temporo-sphenoidal abscess, which was evidently the direct result of contiguity of the opposite sinus with the brain. There were no definite signs at all, and the thrombosis was only discovered because there was an external abscess over the mastoid, and the temporo-sphenoidal abscess *post-mortem*.

Mr. SYDNEY SCOTT was reminded by Dr. Watson-Williams's first case of a similar one upon whom Mr. West and he had operated for lateral sinus thrombosis some years ago.

Mr. ROBERT WOODS asked whether in the first of these cases there was evidence of oedema over the forehead. In the only case of thrombosis of the superior longitudinal sinus which he had seen that sign was not very marked, but it was quite evident on being searched for.

Dr. WATSON-WILLIAMS, in reply, said no vaccine treatment was employed.

Mr. ROBERT WOODS, in reply to Dr. Watson-Williams, said his case was treated by ligation of the internal jugular vein on the right side. It was assumed that the superior longitudinal sinus pursued the usual course and opened into the right lateral sinus. The lateral sinus was opened behind to find out if the thrombus extended that distance, but it did not. There was a good recovery.

Operation for Extreme Deafness and Tinnitus due to Chronic Adhesive Catarrh of the Middle Ear (Tympanoplasty).—Harold A. Kisch, F.R.C.S.—A woman, aged forty-three, with a history of extreme deafness of the right ear of ten years' duration and of increasing deafness

of the left ear. Tinnitus and fulness of the head were marked. She had been treated unsuccessfully for several years by the usual methods. The tympanic membrane on the right presented a similar but rather more retracted appearance to that now seen on the left side. On October 31, 1911, a radical mastoid operation, followed by immediate skin-grafting, was performed on the right side. The tympanic membrane, the malleus, incus, and all the mucous membrane and tissue of the middle ear were removed. The stapes were not interfered with. A broad adhesion was found passing from the drum to the promontory, and the mucous membrane was thickened. The ossicles were not ankylosed. After-treatment by vibratory massage to the ear and petrous bone has been systematically carried out.

Before operation she was only able to hear the loudest shout close to the ear and a whisper not at all. She now hears the voice at 13 ft. and a whisper at 8 ft. The tinnitus and fulness in the head from which she suffered have also much improved. A similar operation with the addition that a foramen was made in the promontory has been done on a boy. The graft over the foramen was planted on the endosteum lining the promontory. A great increase in hearing has resulted.

Dr. URBAN PRITCHARD said that this class of case came under the category of what Professor Politzer thought might be advantageously treated by operation. It was a fibrosis, not oto-sclerosis—*i. e.* one in which there were fibrous bands across the tympanum, probably not many in the pit containing the stapes, or Mr. Kisch would not have succeeded. He always thought that now and then one would get a case in which an operation such as this would produce considerable benefit. But there would not be many cases of the kind.

Mr. MACLEOD YEARSLEY suggested that the case might be shown in another year to see if the result was maintained.

Dr. WATSON-WILLIAMS believed Mr. Kisch would have had as good a result in regard to hearing, and possibly a better eventual result, if he had simply avoided curettage of the mucous membrane in the neighbourhood of the stapelio-vestibular joint, when he performed the radical mastoid operation. He supposed that the patient was hearing by means of the stapedo-vestibular joint, and it was unnecessary to destroy the mucous membrane of the inner wall of the middle ear. As good results were obtained after mastoid operations in which the mucosa of the inner tympanic wall was preserved. He believed there would have been even better hearing in this case if skin-grafting had not been done.

Mr. WAGGETT asked whether Mr. Kisch included among the ordinary methods the use of the Lucæ probe, which seemed now to be somewhat forgotten. One got remarkably good results with it in many cases where Eustachian massage was useless.

The PRESIDENT would have liked to have had more information as to the condition of the patient before operation, and the response to the tests now. He had himself done the operation two or three times, but he never got such a result as to make it worth while thinking of the operation as a routine measure. In this case the result seemed to be mainly due to the removal of the adhesion between the membrane and the inner wall of the middle ear. He agreed with Dr. Watson-Williams that if an operation of the kind were entertained it was better to leave the mucous membrane on the inner wall of the middle ear intact, because if it were removed it was almost impossible to know whether or not it would be reproduced in a sufficiently healthy condition afterwards; if

not it would spoil the effect of what might otherwise have been a good operation.

Mr. KISEH said that originally he intended to show the case in six months, but the patient's hearing had been stationary for nearly a month. He would show the case again a year hence. He did not curette, but simply stripped the mucous membrane off with a narrow blunt separator, as he did not wish to damage the stapes. The idea of removing the mucous membrane and grafting was to obtain immediately a healed surface. Mucous membrane, exposed to the air, would undergo cicatricial changes, and probably cause fixation of the stapes. He had done the same in two other cases, and although the time was short since the operations, they were showing the same results as in this woman. His idea in applying vibratory massage was to stimulate the labyrinth. She had not heard with that ear for ten years, so that the labyrinth was probably, so to speak, out of gear.

Yankauer's New Speculum for the Direct Examination of the Naso-pharynx and Eustachian Tube.—P. Macleod Yearsley, F.R.C.S.—The speculum consists of a tube of peculiar shape which is introduced into the naso-pharynx and illuminated by the ordinary head mirror. It acts as a palate lifter, and as the anterior wall of that part which lifts the palate is in a straight line with the posterior wall of the part which presses the mouth back, it enables the observer to bring into view the orifice of the Eustachian tube and part of its anterior wall. Its introduction is accomplished by passing the beak under the soft palate, while the body of the tube lies across the tongue, and the proximal part of the instrument rests in the angle of the mouth, on the opposite side. The patient's head is held backwards as far as possible, and turned to an angle of 45° toward the side to be examined. The first part which comes into view is the vault of the pharynx, then the fossa of Rosenmüller, the posterior lip of the tube, the orifice of the tube, and part of its anterior lip. As the smaller orifice of the tube measures 1 in. by $\frac{5}{8}$ in. the view obtained is good, and it is possible to use instruments such as forceps or enrettes, through it, to make applications to the Eustachian tube, or to inflate the ear with a straight catheter. I have already found the speculum valuable, and I am using it in combination with the Holmes's electric naso-pharyngoscope. The latter gives so clear a view of the naso-pharynx with a little practice that I been able to make drawings of the condition seen, and some of these I hope to show to the Section early next session. For treatment, however, the Yankauer speculum is much more convenient, as it enables one to manipulate by direct vision.

Dr. H. J. DAVIS said those who were in Berlin in September might have seen a demonstration given at the Charité of the examination of the Eustachian tube by Dr. Gyergyai, of Buda-Pesth. It was done with a Brünings' handle lamp with a very short tube, under cocaine anæsthesia, the patient's head being well over the table in the examiner's lap. The finger was passed behind the palate first, and the tube passed beside it and the light turned on, and the Eustachian tubes could be easily seen as well as the entire post-nasal space. It gave a stronger light than Yankauer's, and one could easily see whether adenoids were present or not. The head of the patient was placed right over the end of the table as in Rose's position for the adenoid operation, and the examiner sat on a stool at the head of the patient and held the extended and overhanging

head between his knees. The tubes designed for this examination were of six different sizes and could be obtained at Deteil's in Berlin.

The PRESIDENT remarked that in order to intensify the view through such a speculum, Chevalier Jackson's method might be adopted of having a very small lamp at the end of the speculum.

Tuberculous Disease of the Temporal Bone in a Boy, aged seven and a half.—W. H. Kelson, M.D.—First operated on at the age of six and a half months. Tubercle bacilli found in the discharge and tissues. Quite well for four years, then recurrence and operation. Again well apparently for a year, then recurrence and operation. Tuberculin injections tried, but apparently no benefit.

The PRESIDENT asked whether tubercle bacilli was found in the soft tissues or in the bony tissues. In his experience the best place to find bacilli was just where the disease invaded the bone. He had had great difficulty in finding them in the discharge, and only occasionally had he found them in granulation-tissue. But he had found the bacilli many times in the advancing edge of the disease. Considering the boy's condition, he would like to know whether Dr. Kelson intended to perform a plastic operation to close the fistula behind the ear. Also, what doses of tuberculin were given, and how many. He had himself had one or two cases which reacted well to tuberculin injections, controlled by the opsonic index. In one case repeated operation having failed to eradicate the bone disease further operations combined with tuberculin injections resulted in complete healing, with the exception of facial paralysis and loss of hearing on that side.

Mr. A. L. WHITEHEAD asked whether Dr. Kelson grafted in this case. He had followed one case for years, a girl who had recurrence four times. She had no other manifestations of tuberculosis. Bacilli were not demonstrated, but she had tuberculous tissue and giant-cells. In his opinion grafting was not desirable in tuberculous cases.

Dr. Kelson, in reply, said tubercle bacilli were found in the discharge and in some granulation-tissue which contained a spicule of bone. The tuberculin used was Burroughs Wellcome & Co.'s tabloids, $1.0 \frac{1}{1000}$ mg. of the new tuberculin, which was injected every week for some months, but there was no apparent result. He did not believe in closing the cavity until healing was complete; there were still some pockets due to the breaking down. Grafting was done at the second operation.

Solid Symmetrical Œdema of both Auricles in a Woman, aged thirty-six; twelve months' duration—H. J. Davis, M.B.—Both pinnae have been in the condition observed for twelve months. The auricles are red, swollen, and pit on pressure; the meatus is swollen, and there is a discharge from both canals, but only the left membrane is perforated; the right is normal. The case is not a perichondritis, though it looks like it; Wassermann reaction negative. Von Pirquet reaction negative; physical signs of old adhesions in the chest and old interstitial keratitis.

Mr. ROBERT WOODS said the case seemed to be analogous to elephantiasis, which one saw more often in the old days, from repeated attacks of erysipelas, where in consequence of repeated inflammations the subcutaneous tissue underwent enormous hypertrophy. He thought in this case the hypertrophy was due to repeated attacks of acute inflammation proceeding from an eczema of the external meatus, and that repeated attacks of acute inflammation produced the hypertrophy now seen.

Mr. A. L. WHITEHEAD regarded the case as one of chronic inflammatory condition due to repeated infection, and he suggested that an autogenous vaccine should be prepared from the discharge and inoculated.

The PRESIDENT also thought it was the result of repeated infection. It seemed to be too dense for elephantiasis.

Dr. DAVIS, in reply, said that when he first saw the case he thought it was due to infection from the aural discharge, but the dermatologist who saw it would not accept that idea, but discussed elephantiasis, tuberculosis, syphilis, leprosy, and other diseases. There was otorrhœa on the left side alone. The patient had the physical signs of old phthisis in the chest, and she showed interstitial keratitis. He thought she was syphilitic, but the Wassermann reaction was negative. A vaccine had been tried and had failed.

Result of Perichondritis of Auricle in a Boy, aged seventeen.

—H. J. Davis, M.B.—In May, 1911, a radical mastoid operation was performed for long-standing otorrhœa; wound healed in a week. A fortnight later perichondritis supervened; incisions were made on four occasions under gas before the inflammation subsided. Shrivelling of the affected area resulted, and the upper part of the pinna dropped away from the side of the head. Two months ago a plastic operation was performed in order to reduce this deformity, and the ear is now in contact with the head. The upper half of the pinna is alone affected, and this is what happens in perichondritis. In the previous case the entire pinna is involved. Dr. Jansen, to whom the exhibitor had mentioned these matters, said that the only thing to do in these cases was to dissect out the cartilage at once to arrest the process.

PROCEEDINGS OF THE ROYAL SOCIETY OF MEDICINE—LARYNGOLOGICAL SECTION.

February 2, 1912.

Dr. STCLAIR THOMSON, *President, in the Chair.*

Abridged Report.

Specimen from a Case of Discrete Angelioma of Nose.—

Herbert Tilley, F.R.C.S.—Removed from a man, aged seventeen, who applied to hospital for nose-bleeding, which had rendered him very anæmic and weak. The tumour was situated on the left side of the septum and grew from an area corresponding to the junction of the triangular cartilage of the septum with the central plate of ethmoid.

Pathological Report by H. G. Butterfield, M.B.—The specimen is a bleeding polypus of the nasal septum. For the microscopical examination a small piece of tissue was removed from the centre of the specimen. Over the greater part of the external surface the epithelium has disappeared, but that which remains has the characters of a thin, squamous epithelium, while in the depths of a cleft it assumes a columnar character.

The structure of the tissues subjacent to the ulcerated portions is obscured by extravasated red blood-corpuscles and polymorphonuclear leucocytes. The central portion of the mass consists of a few broad strands of well-formed connective tissue radiating from the hilum and supporting an extremely cellular connective-tissue stroma containing an abnormal number of vessels of all sizes. The larger of these possess a definite endothelial lining in which the nuclei are more numerous and prominent than usual, while the remainder of their walls is continuous with the stroma and indistinguishable from it. Many of the smaller appear as mere spaces in the connective-tissue stroma, and are only distinguishable as vessels by their containing blood-corpuscles. Apart from the strands radiating from the hilum there is no definitely collagenous connective tissue in the specimen. No abnormal mitoses were seen throughout the whole of the tissues. The specimen shows none of the characteristic features of a malignant growth of a sarcomatous nature. The characters are those of a hæmangioma.

Dr. PEGLER said this specimen belonged to a rather unusual class—viz. the connective-tissue type of fibro-angioma, which, though intensely vascular, displayed a dense crowding of endothelioid cells and marked cell-proliferation around the vessels. The cells in question were those which, during the period when these growths were less well understood, had so often led to a mistaken diagnosis, and consequently to not a little anxiety from the clinical point of view, especially when microscopic appearances were taken into consideration with the recurrence that usually followed upon incomplete removal. The term "sarcomatoid" (angioma sarcomatodes) had been employed for the type by certain foreign authors, and he rejoiced to see by contrast such a truly accurate and scientific description of the present growth furnished by Mr. Butterfield.

Mr. ROSE asked whether there was evidence of ulceration or inflammation in the nose preceding the formation of the swelling; also what was the occupation of the patient, especially in reference to alcohol. In two cases under his own care the patients were bar-tenders.

Mr. TILLEY, in reply, said the growth was only ulcerated where cotton-wool or gauze had exerted pressure on it in the effort to stop the bleeding. He did not know the patient's occupation. He exhibited also another specimen from a gentleman, aged sixty-nine, who came to his house that morning on account of violent bleeding of the nose. The growth filled the entrance to the nasal cavity just beyond the vestibule, and he (Mr. Tilley) at first thought it might be malignant. On touching it with a cocaine mop it bled at once and very freely. He put Meyer's knife ring behind it and removed it, and then applied the cautery to the base. There was now only a black patch where the stump was cauterised. The septum was very much deviated into the right nostril, and the growth took its origin from just below the maxillary crest in the left nasal cavity.

Enlargement of the Nose in a Patient suffering from Nasal Polypi and Pansinusitis.—Herbert Tilley, F.R.C.S.—J. F——, male, aged fifty-two, applied for relief of nasal obstruction which was found to be due to multiple polypi. Pus and mucus can be evacuated from all nasal sinuses. Many polypi have been removed and the sinuses irrigated. The nose is very much enlarged, especially in the region of the bridge, where considerable periostitis seems to be present. The upper regions of the septum are also very much thickened.

The PRESIDENT said that he once had a run of such cases, and thought

there must be some periostitis of the nasal bones; but the enlargement went down in many cases after removal of the polypi. But there were others, of which this case seemed to be an example, in which it did not seem to subside at all. He tried all the antiphlogistic methods, but although the noses were clear and the sinuses were treated, the patients continued to have the pain until they disappeared from view. They were all hospital cases. Before the days of the Wassermann reaction he thought there was a syphilitic basis, and so gave the patients courses of iodide and perchloride of mercury, but without benefit.

Dr. DAX McKENZIE did not know whether swelling of the upper part of the septum in suppuration of ethmoidal polypi had been remarked upon. Edema there was not infrequent, definitely localised to the upper part of the septum, and not extending any further downwards than the lower edge of the ethmoidal portion.



Enlargement of nose in a case of nasal polypi and pansinusitis.

Dr. FITZGERALD POWELL said that in many that had come under his care, especially where the polypi had existed in numbers and for a long period, he had observed atrophy of the ethmoid bone; and often, as in this case, a thickening of the nasal bones, as a result of a periostitis. In a number of such cases he thought there might be a syphilitic basis to account for the thickening.

Ulcerated Growth of the Larynx.—J. Everidge.—The patient, an actor, was well until two months ago, when he noticed increasing hoarseness. This has been gradually getting worse since then. There has been no pain or difficulty on swallowing and no cough. Patient thinks he is losing weight. There is no history of syphilis and a Wassermann reaction was found to be negative. A swelling occupies the anterior fourth of the right ventricular band; the inner surface of the swelling is ulcerated. The cords and the rest of the larynx appear normal. Scrapings were taken from the surface of the ulcer, and an examination for tubercle bacilli was negative. Von Pirquet's reaction

was markedly positive, and the reaction with subcutaneous injection of tuberculin is now being tried. There are no physical signs in the chest or elsewhere, and no enlarged glands can be felt.

Dr. WATSON-WILLIAMS said the appearance suggested a tuberculous deposit more than anything else. With regard to the von Pirquet reaction, his experience led him to the conclusion that that reaction counted for very little as a diagnostic method. He cited as an example of its unreliability the case of a female patient with a larynx suggesting tuberculosis, in whom repeated von Pirquet tests were uniformly and undoubtedly negative. The patient was subsequently shown¹ by his colleague Mr. Wright. Shortly after that she developed a general pulmonary tuberculous condition, and died with typical laryngeal tuberculosis. Tuberculin was much more valuable for diagnostic purposes. He considered the von Pirquet reaction to be unreliable, both as a positive and as a negative diagnostic test of active tuberculosis.

Dr. DE HAVILLAND HALL expressed his concurrence with Dr. Watson-Williams's remarks. He had ceased to use the von Pirquet reaction. It was disappointing in both directions. It was sometimes positive when there was no other evidence of tubercle obtainable, and it was often negative when there was marked tuberculous mischief.

Mr. HERBERT TILLEY agreed that the appearance of the case suggested tubercle, the other alternative being malignant disease, but against the latter was the free mobility of the adjacent cord.

Mr. G. SECCOMBE HETT agreed that the physical signs in the larynx pointed to the diagnosis of tuberculous laryngitis in this case. He asked Mr. Everidge whether the curetting in this case was for purposes of diagnosis or treatment. It was not easy to demonstrate tubercle bacilli in scrapings from the larynx where there was no sputum, or the sputum examination was negative, although they could usually be found in such cases of tuberculous laryngitis by staining for tubercle bacilli in sections cut from parts removed.

The PRESIDENT agreed that everything seemed to point to tubercle. The scraping was for diagnostic purposes, and was not very vigorous. It was hoped to find bacilli on the ulcerated surface, most probably from the lungs. It was easy to find bacilli in miliary tuberculosis of the pharynx, but he agreed it was rare to find them in ordinary laryngeal tuberculosis.

Mr. EVERIDGE, in reply, said there had not yet been an opportunity of having the tuberculin reaction done, as the patient would not come into hospital. There was a tuberculous family history; one brother died of tuberculosis of the spine. The sputum did not reveal bacilli.

Thyroid Tumour at the Base of the Tongue.—Charles A. Parker, F.R.C.S.Ed.—The patient is a girl, aged sixteen. Her only symptom is some difficulty in speaking, which has been especially noticeable during the last six months. The thyroid gland in the neck seems very ill-developed.

Mr. WAGGETT said the case was of interest as a surgical problem. The patient could not speak properly, and it was evident from palpation of her neck that she could not afford to lose much of the tumour at the back of her tongue. He thought it should be possible to dislocate the tumour downwards and forwards and to fix it in the new position after splitting the tongue above the hyoid. In a word, he did not see why she

¹ JOURN. OF LARYNGOL., RHINOL., AND OTOL.

should not have the gland dislocated and made into a subcutaneous organ.

Dr. FITZGERALD POWELL said he agreed that this was a thyroid tumour at the base of the tongue. He thought that the suggestion of splitting the hyoid and transplanting this growth in this way was rather a severe operation to subject the patient to. He should be inclined to deal with it in a way he saw Dr. Dundas Grant deal with a very large thyroid tumour far back at the base of the tongue. He shelled it out through the mouth while pulling the tongue forward. If it was removed in this way a portion might be implanted in the normal position *if no thyroid gland was found*. This growth interfered so much with the girl's speech that he thought it should be removed, even if he had to give thyroid extract.

Dr. WATSON-WILLIAMS said he gathered that there was no thyroid gland in the neck, and it might be well to give, as in cases of thyroid gland enlargement, iodine in a preparation such as iodoglydine, or thyroid gland, or the extract. These sometimes resulted in diminution of the size and might prove helpful in this case, which did not lend itself to operation.

Dr. KELSON said he did not see why, in this case, the same thing should not be done as in a case of ordinary enlarged thyroid—*i. e.* removing half. The reason for removing the projecting part was that the girl had so much difficulty in speaking and swallowing, and the results of the operation would not be visible from the outside.

Mr. PARKER, in reply, said he hesitated to operate because he believed there was practically no thyroid gland in the neck, and he thought having to take thyroid extract all her life would be worse for the patient than having a little difficulty in speech. In the only case of the kind he had had the tumour shelled out with remarkable ease and seemed almost loose in the tongue. Dr. Watson-Williams's suggestion of trying to reduce by it the administration of some form of iodine seemed good. His own idea had been, as Dr. Kelson suggested, to remove part of it and leave the other part to act as thyroid gland.

Swelling in the Right Tonsillar Region.—W. H. Kelson, M.D.—

Patient, a woman, aged twenty-four, states that her illness began two months ago with a sore throat, but she was not feverish. She never had throat trouble before. A little later she noticed a swelling at the angle of the jaw, which has gradually increased in size. There has been no discharge from the throat, but she noticed a discharge from the right ear a week ago. There is now a firm swelling in the right tonsillar region, and a mass at the angle of the jaw.

Dr. DONELAN thought it a case of long-standing chronic otitis, at present exacerbated by tonsillitis. The patient admitted a discharge from the ear over a month ago, and she could not say how long. From the amount of granulation-tissue in the meatus and its appearance, as well as the tenderness over the mastoid, he thought the whole condition, including the glands, dependent on that of the tympanum, though it was not very common to see such glandular enlargement in these cases. He thought that a thorough mastoid operation and removal of the glandular mass the most suitable line of treatment.

Dr. DAN MCKENZIE said there was a swelling in the lateral wall of the pharynx, behind the tonsil.

Mr. TILLEY suggested that the tonsil be enucleated. He believed that under the upper and outer region of tonsil there was a collection of

pus, and that this caused the enlargement of glands. He had only seen pus find its way from the ear into the lateral wall of the pharynx once in twenty years.

Mr. WESTMACOTT concluded that the enlargement of the glands was due to irritation from the ear; it was the situation for adenitis in early cases of obstruction of the meatus. He thought there was first ear trouble, and then the pus worked down the Eustachian tube, infected the tonsil, and set up peritonsillar inflammation. The enlarged glands were too high to be due to primary infection from the tonsil.

The PRESIDENT said he did not think the tonsil itself was very much enlarged, but it was tilted and pushed forward by a large swelling, possibly tuberculous and glandular, behind it.

Dr. KELSON, in reply, said the case was much altered since he saw it ten days ago; there was now a soft point, and he suspected there was some form of peritonsillar abscess present. Ten days ago there was simply a firm mass, which seemed solid, without fluctuation.

Post-influenzal Paralysis of the Soft Palate.—**Andrew Wylie, M.D.**—Patient, a male, aged thirty, has always been healthy. In the second week of December he was laid up for ten days with an influenzal cold, congested throat and fever. He returned to work before Christmas-time feeling weak, but otherwise well. A few days later fluids regurgitated through his nose; solids he could swallow quite easily. By January 7 his speech became nasal in character. A culture has been taken, but no Klebs-Loeffler bacilli have been discovered. On examination a bilateral paralysis of the soft palate is seen; sensibility is, to a slight degree, diminished. The naso-pharynx appears normal. The movements of the tongue, larynx and sterno-mastoid muscle are normal. Tonics of iron and strychnine have improved the condition. The exhibitor considers it a case of post-influenzal neuritis simulating the condition more commonly found as a sequela of diphtheria.

Dr. WATSON-WILLIAMS said that negative results from one examination for Klebs-Loeffler bacillus, or even two, were inconclusive. There were instances in which no bacilli were found, which after death proved to be diphtheria. It was one of the most elusive organisms. One became more and more chary of accepting any other infective organism as the cause of post-inflammatory paralysis, though he admitted the occurrence of a true post-influenzal neuritis or paralysis. He had himself described cases of non-diphtheritic paralysis of the palate following inflammation of the tonsil, but extended clinical experience left him with a conviction that even after a very thorough and careful bacteriological investigation the evidence that a case was not diphtheritic was not absolutely conclusive, and that so-called non-diphtheritic paralyzes following streptococcal tonsillitis were in reality instances of an undetected diphtherial element in a mixed infection.

Dr. DE HAVILLAND HALL asked whether Dr. Wylie could give information as to the patient's power of accommodation, and whether the knee-jerks were present.

Mr. WESTMACOTT said that some years ago, at the Children's Hospital, Pendlebury, there were several outbreaks of diphtheria in the wards, and Dr. Ashby and he made a systematic examination of the throats of all the nurses and wardmaids in the wards concerned. Two of the nurses had paralysis of the soft palate without having had symptoms of sore throat; in the throats no diphtheria bacilli could be found, and there was no membrane. On the other hand, there were wardmaids and

nurses in whom the bacillus was found who had no illness and no paralysis. They both concluded that it was not reliable to depend entirely upon the reported absence of the Klebs-Loeffler bacillus. Cases were examined, but no bacilli found, and yet they developed post-diphtheritic paralysis. He believed such cases as the present one were post diphtheritic.

Mr. HERR asked whether Dr. Wylie had seen the patient during the time he had a "congested throat." Possibly this was an atypical attack of faucial diphtheria. He had recently seen a lady suffering from lateral pharyngitis of a persistent and chronic character. She had a slight whitish secretion from some enlarged lymphoid follicles on the pharynx, extending up towards Rosenmüller's fossa on either side. Four cultures were made, two from each side: both cultures from the right side were positive as regards Klebs-Loeffler bacilli, while those from the left side were both negative.

Dr. PETERS remembered a case in which, after tracheotomy for diphtheria, bacterial cultivation showed Hoffmann's bacillus and the Klebs-Loeffler bacillus in the tracheotomy wound, whereas in the throat there were only Hoffmann's bacilli. In the nose neither were present.

Mr. H. D. GILLIES asked whether cultures of the mucus were taken when the patient had the cold, as in that case influenza bacilli would be discovered.

Dr. WYLIE, in reply, said that when he first saw the case he believed it to be diphtheria. Three cultures were taken by Dr. Wingrave. Both the knee-jerks and the ocular conditions were normal. He did not see the case when the throat was congested; the patient attended the clinic suffering from paralysis. No culture was taken from the nose.

Skiagrams illustrating (a) the Palliative Action of Radium Salts in Malignant Stricture of the Gullet, and (b) the Advantages of the X-rays Screen for accurately applying a Radium Apparatus in the Strictured Area.—William Hill, M.D.—Dr. HILL emphasised the fact that these skiagrams taken before radium treatment, and again six weeks later, afforded unequivocal evidence that improvement in swallowing was due to marked shrinkage of the growth and increase in lumen of the gullet, which could not be due to a "bougie effect," but was a genuine "radium effect." The action of the radium salts was uncertain, but he had shown in a communication made to the Medical Society of London a year ago that remarkable improvement had been attained in ten out of twenty-one cases of gullet cancer which he then recorded, and in no fewer than four of these there had been a temporary local surface disappearance. Two of the latter had since died from inaccessible secondary growth in the lungs. He formerly inserted the Finzi radium apparatus (in which the tubes were connected with a long flexible silver style) by means solely of his (the speaker's) endoscopic funnel with a lateral slot. This lateral slot enabled the cesophagoscopic pin funnel to be withdrawn without disturbing the style of the radium apparatus. During the last year, however, he and Dr. Finzi had modified their former technique. The patient was first examined under a general anæsthetic, the gullet was washed out, the stricture dilated up by endoscopic bougieing, and its upper limit, and if possible its length, ascertained by accurate measurements. If the stricture was very tight his intubation apparatus was inserted for a day or two. The actual application of radium was then made under cocaine in the X-ray room by the aid of the cesophagoscope combined with the X-ray screen. A bismuth meal enabled one to see the exact upper and lower limits of the stricture, and to accurately

adjust the one, two, or three radium tubes employed. Dr. Hill, in conjunction with Dr. Finzi, employed from 150 mg. to 255 mg. of radium bromide in screens of platinum 2 mm. in diameter, the application varying from twelve to twenty-four hours, which was repeated at the end of six weeks. Although he had seen what to the naked eye looked like a local disappearance of all gross evidence of disease, he had been careful to avoid claiming a cure. Without microscopic evidence one could not claim even a temporary cure; and in the gullet, except in a very early limited growth, one had to reckon with latent peripheral invasions and secondary growths in the mediastinum and lungs. He regarded radium as a palliative which was often highly valuable for a time.

Mr. TILLEY said it was comparatively easy by the direct method to see a growth and to pass the radium into it, but in withdrawing the tube, or by the patient shifting, there might result a slight change in the position of the radium, so that during the time occupied by the treatment the chief effect of the radium might be exerted on comparatively healthy tissue. Careful adjustment of the wire fixed to the radium was required to enable the patient to move his head, for the radium was applied for several hours. The X-ray check was necessary in order to be sure that the radium was in the centre of the growth. A bismuth meal could be given beforehand so as to aid in the localisation of the growth. Dr. Hill had done a service by bringing the pictures forward. He asked what was his experience of radium on that form of growth (squamous carcinoma). He (the speaker) had applied it in twelve cases, but so far only relief of obstruction had been secured.

Dr. FITZGERALD POWELL said he thought it would be of interest if Dr. Hill would explain fully his method of procedure, and how he dealt with the difficulties of keeping the radium *in situ* as mentioned by Dr. Tilley.

Dr. HILL, in reply, said that the growth gripped the radium tubes, but in order to keep the whole apparatus from shifting, the upper end of the flexible style was bent so that a pharyngeal angle was formed which prevented much up-and-down movement, and if shifting had taken place in making the bend this could be seen in the screen picture and a re-adjustment made. The oral end of the style was then suitably bent and fastened at the mouth either to the teeth or a denture, or bandaged against the side of the face outside the mouth.

Growth on Anterior Third of Right Vocal Cord.—James Donelan, M.B.—Patient, a male, aged forty-four, a bass singer, had no vocal trouble up to July, 1911, when he caught cold and became very hoarse; he, however, continued to sing. After some weeks hoarseness disappeared; about November 1 it returned. Exhibitor saw him for the first time on December 1. There is a partly subglottic growth on the margin of the anterior third of the right vocal cord which at that time was freely movable.

Mr. H. D. GILLIES suggested that a vaccine might be tried, as he had seen such growths disappear by giving vaccine, in one case of pneumococci and influenza bacilli.

Dr. DONELAN replied that he thought it was a singer's node. It was of somewhat unusual interest in being unilateral while of such large size, and apparently of such long duration. It had, however, diminished considerably during the month's rest the patient had had. If the vaccine treatment suggested could take the place of rest in these cases it was a thing much to be desired, as to secure adequate rest was always the difficulty with professional singers.

Microscopical Section of a Malignant Columnar-celled Carcinoma of the Œsophagus.—Charles W. M. Hope, F.R.C.S.—The patient, a male, aged twenty-five, for some months had complained of dysphagia and progressive emaciation. On examining by the œsophagoscope, a large growth, in parts polypoid, was found 32 cm. from the incisor teeth. A piece was removed on two occasions and microscoped. The growth bled excessively. The patient eventually died at Guy's Hospital. Interest centres on a columnar-celled growth in a tube lined by squamous epithelium in adult life. Is the growth starting from the foetal remains of lining membrane, being columnar ciliated in early foetal, and columnar in late foetal life?

Mr. ROSE did not doubt that it was columnar-celled carcinoma: such were recorded from time to time as occurring in various parts of the œsophagus. But when such a striking example occurred one wondered whether it did not take origin in the stomach or the lowest part of the œsophagus and work upwards.

The PRESIDENT called attention to the fact that the growth was 12 in. from the teeth. The man he showed at the Section two months ago, with malignant disease of the larynx, was now dying in the clinic, and he was only twenty-three years of age. The present was one of the earliest cases of malignant disease in the œsophagus he had seen in a man.

Mr. HOPE, in reply, said that since sending in the specimens he obtained a report of the *post-mortem* examination at Guy's Hospital, which stated that the growth was 5 in. long, and extended into the cardiac end of the stomach for about $\frac{1}{4}$ in.; the upper and lower parts were everted, and the whole centre was necrotic. There was a fistula found extending into the pericardium. The growth just reached to the stomach, and in the liver there were numerous small secondary deposits. He did not know whether the growth started in the stomach and spread 5 in. up the narrow tube, but most likely it was primary in the œsophagus.

Abeysance of Nasal Breathing.—Norman Patterson, F.R.C.S.—Female, aged twenty-one, domestic servant. Trouble dates from an influenza cold, accompanied by a yellow discharge from the nose, contracted last April. Patient complains of a lump in the throat. Her mother says that if she tries to eat anything solid it has to be forced down with the fingers. She can swallow cake if first of all mixed with milk. During sleep she makes a terrible noise. The senses of smell and taste are lost. The voice varies from time to time and speech is peculiar and difficult. She says "bluther" for mother, "lloise" for noise, etc. The mucous membranes of the nose, pharynx and naso-pharynx appear to be anaesthetic to the probe. Examination of the post-nasal space is negative. On the mouth being forcibly held closed the patient gets distressed, and the face congested. She cannot blow out a candle with the nose. Rapid lip movements are impossible. On depressing the tongue the soft palate is twitched up spasmodically. Laryngeal examination shows good adduction. The patient is said to be obstinate. She showed average intelligence at school. Since a blow on the bridge of the nose fourteen months ago she has become more nervous. Two years ago she suffered from "diphtheritic" throat. There are six other members of the family with a history of ? epileptic fits, ? meningitis in one. When the patient was first seen during the summer the cautery was applied to both inferior turbinates, and for a month after this she was practically well.

Dr. PEGLER said the case reminded him of one of the cases he had

shown on two occasions, first on account of exaggerated and obstinate aphonia, and later for the series of hysterical symptoms which afterwards developed, in which close rhinolalia was a marked feature, and was due to an inco-ordination of the action of the palate muscles. She had hemianæsthesia of the whole body, and became for some time an in-patient at Queen's Square Hospital. At present she was able to phonate quite audibly, but the speech defect was as bad as ever. Both the speaker's cases were submitted to a test attributed to Lermoyez, and which consisted in holding up the soft palate by means of a tape passed along the nose, drawn out of the mouth, and tied over the upper lip. When the mouth was then closed by the hand placed over it, the patient was forced to breathe through the nose, though only after much struggling and apparently commencing cyanosis. This proceeding had been sufficient to cure the milder case, probably by its moral effect.

Production of Lateral Perforations of the Palate by a Tertiary Ulceration.—**E. A. Peters, M.D.**—Female, aged twenty-four. The last child is four years old, and the history is indefinite. The lateral perforations are well marked and are symmetrical; on vocalising the trabeculæ pull on the raphe of the palate. A punched-out ulcer is seen on the left palate and a similar condition was observed during the formation of the perforations. The superficial scars of similar ulcerations are seen scattered over the palate. Pericranial gummata are present. It is suggested that traction and the avoidance of muscle by gummatous infiltration are the factors in production of these bands.

The **PRESIDENT** asked whether Dr. Peters had watched the perforations taking place. It was interesting to see that more or less symmetrical perforations could be formed by syphilis; and, of course, by other conditions also.

Dr. **DAN MCKENZIE** could confirm what Dr. Peters said, as the case had been under him before Dr. Peters saw it, and there were then no perforations.

Dr. **PETERS**, in reply, said he watched the formation of the left perforation carefully. At first the upper part of the perforation was ulcerated and the lower bay cicatrising; the ulcer was similar in character to that seen now on the palate. The ulcer healed under treatment, leaving the present perforation. Extensive superficial scarring over the thick muscular part of the palate was due to similar ulceration, and the punched-out ulcer and a pericranial gumma were at present evidence of active mischief.

Tumour of Right Lateral Wall of the Pharynx involving the Right Arytæmoid.—**E. A. Peters, M.D.**—Female, aged twenty-seven, married five years. The first pregnancy occurred a year ago; since that time she has experienced increasing soreness on swallowing, so that it is painful to take even fluids. The patient reports perfect health up to her pregnancy. By the indirect method a tumour can be seen projecting from the laryngo-pharynx and pushing the larynx aside; the edge only can be seen, and it overhangs as if it were the edge of an ulcer. The right ary-tæmoid is red and oedematous. A Wassermann reaction has not been made.

Mr. **HERBERT TILLEY** said that if Dr. Peters could not determine the nature of the ulcer by the indirect method it should be carefully examined by the direct, because the appearance made him suspicious that there was post-ericoid malignant disease. He had shown a girl, aged

twenty-one, with advanced malignant disease in this region, so that age did not exclude malignancy. One point against malignant disease was the intense pain on swallowing, which was not a feature of early malignant disease in that position. If, on the other hand, it was malignant ulceration, it might be possible to remove it by external operation, because it did not seem very extensive at present.

Dr. Kelson had had a case of malignant disease in a woman, aged twenty-two, in that situation. The present case was very suspicious of malignant disease, as the right cord did not move properly.

Dr. PETERS feared the case was malignant.

Ulcer of the Floor of the Mouth. ? Septic or Malignant.—Geo. C. Cathcart, M.D.—Female, aged forty-two, came to hospital two days ago, complaining of a sore throat of six months' duration. On examination nothing is to be seen in the throat, but on the left side under the tongue, involving the posterior third, there is an ulcer with a punched-out appearance and everted edges. The left submaxillary gland is also enlarged and hard. There is little pain except on eating. There is no history of specific trouble or of tuberculosis.

The PRESIDENT suspected strongly that it was a case of malignant disease.

Mr. WESTMACOTT regarded the condition as septic. It was similar to a case which was sent to him by a dental surgeon three months ago, in which there was a similar cracked ulcer in the left cheek. Some teeth had given trouble and had been removed. The dentist thought the patient had been inoculated, and that it might be syphilitic; but if it was it was apparently in the tertiary stage. He (Mr. Westmacott) therefore removed a portion of the growth, and sent two pieces for microscopical examination, and it was reported in both instances that there was no evidence of syphilis, and that it was purely septic. The Wassermann reaction was negative. He applied chromic acid and antiseptic mouth-washes, and it healed. Iodide of potassium had had no effect upon it. There had been very little enlargement of the glands.

Three Cases showing Different Stages of Cystic Fibromata.—G. Seccombe Hett, F.R.C.S.—CASE 1: *Cyst of Right Vocal Cord.*—The patient, a woman, aged fifty-four, has had hoarseness for twelve years. She is in good health, but was urged by friends to be seen for her hoarseness. On examination there is a cystic swelling on the right vocal cord. General health good. No physical signs in the chest.

CASE 2: *Fibroma of Right Arytænoid.*—The patient, a man, aged thirty-two, has phthisis. No throat symptoms. At the routine examination of the larynx (which all in-patients at Mount Vernon Hospital undergo) there was found to be a soft, yellowish swelling attached to the right arytænoid, which is movable at its base of attachment.

CASE 3: *Cyst of Epiglottis.*—A man, aged twenty-nine, with phthisis. At the examination of the larynx a cystic swelling, with a solid basal half, was seen attached to the lingual surface of the right half of the epiglottis.

Mr. HETT said that the cases had been seen within the last month together with another case of cyst of the left arytænoid. He thought that the pathology of the series was the same, and that they showed different stages of cystic fibromata. The growth on the right arytænoid (Case 2) looked solid, but a fourth case which seemed precisely similar had been found to be partly cystic on removal. The growth on the

epiglottis (Case 3) was half solid and half cystic, while the growth on the vocal cord (Case 1) was entirely cystic. With regard to treatment, Mr. Hett proposed to remove the growth from the vocal cord with Paterson's forceps by the direct method. He did not propose removal in the other two cases, as they were not causing symptoms. The fourth case of cyst of the left arytaenoid had been removed by the indirect method with arytaenoid punch forceps, as it was interfering with the movements of the larynx. It had healed well.

Mr. PARKER said he thought that Case 1 was a soft fibroma, not a cyst.

Dr. FITZGERALD POWELL thought it was a mucous cyst of the cord, and that it should be touched with the cautery. That seemed to be the safest way of dealing with the condition, and it would leave no ill-effects. The cautery, he thought, was a much safer way of dealing with these cysts of the larynx than any other.

The PRESIDENT said he had a similar growth not long ago which he seized with Mackenzie forceps and removed, but on looking at the forceps afterwards there was very little in them; but that morning the patient turned up with a decided recurrence. He would now apply the galvanocautery.

Mr. TILLEY said he first thought the swelling under discussion was cystic and coming from the ventricle of Morgagni on to the cord. The patient was then gagged, and on looking again the tumour was in the arytaenoid region.

Case of Tonsillar Neoplasm in a Tuberculous Subject—J. Dundas Grant, F.R.C.S.—The patient, a young girl suffering from tuberculous infiltration of the left vocal cord and interarytaenoid space, along with pulmonary tuberculosis, was found to have an elongated outgrowth from the lower part of the left tonsil, pale and perfectly smooth, presenting the appearance of a fibroma. The structure of these growths, of which a number have been brought before the Society from time to time, has varied, and the result of the microscopical examination of the present one will be reported at a later meeting.

Mr. HERBERT TILLEY said it was very like the cases which were shown five or six years ago by Mr. Arthur Cheate and others, including himself. Mr. Cheate's grew from the intra-tonsillar fossa. Apparently a little tonsillar tissue grew out of a crypt. He did not think the growth had any connection with tubercle.

The PRESIDENT said he also had shown a similar case. It was simply tonsillar tissue, pedunculated.

AUSTRIAN OTOLOGICAL SOCIETY.

November 27, 1911.

Prof. V. URBANTSCHITSCH *in the Chair.*

*(Abstract of proceedings from advanced proofs by courtesy of
Dr. HUGO FREY.)*

Conjugate Deviation to the Right (? Traumatic) with Paresis of Movements of Eyes to the Left.—E. Ruttin.—The probable diagnosis of this case was a supra-nuclear lesion on the left side. A child,

when stimulated *via* L (that is, by cold irrigation of the right labyrinth), accentuated the spontaneous deviation of the eyes to the right; thus the vestibular stimulus *via* the paths L D A E and L D O J₁ remained unimpeded. On the other hand, the quick left-directed component was entirely absent after cold irrigation of the right ear. Lastly, since the quick left-directed component, as already mentioned, according to Bárány was dependent on the integrity of the routes L D A₁ E₁ and L D O₁ J and their connection with the contra-lateral eye-movement centre B₁ the lesion could only be situated between B₁ A₁ and B₁ O₁, that is, it was a supranuclear lesion between the oculo-motor nucleus and the centre for eye-movements. That the lesion could be situated still higher, that is between B₁ and c₁—a subcortical lesion—could therefore be excluded because under such conditions only the intentional movement of the eyes to the left would have been prevented and the quick component resulting from cold irrigation of the right ear would have remained unaltered.

It was interesting that the paresis of the eye-movements to the left recovered slowly and unequally in the two eyes—a fact that apparently till now had not been observed—so that after some two weeks attempt to turn the eyes to the left resulted in a greater movement in the right eye than in the left. At the present time a fairly good movement had reappeared on both sides, but that on the right was the better. Possibly one might conclude from these phenomena that the nerve bundles uniting the centre for eye-movements with the oculo-motor nucleus were rather widely disposed, as otherwise the lesion would have been less limited in its effect. As to the spontaneous deviation to the right the author was unable to offer an exact explanation, but possibly the reason lay in the preponderating influence of the centre for eye-movements on the right side.

On the Observation of Spontaneous Deviation in Pointing and the Vestibular Pointing Reaction.—Zdzislaw Reich.—The author of this communication stated that the methods which he adopted to test these phenomena in connection with the vestibules and in cases of cerebellar disease depended essentially on that diversion of the patient's attention as practised by neurologists in testing reflexes, and was particularly useful in those instances where the usual methods failed to elicit these reactions. It had occurred to him that if Bárány's contention were correct, viz. that in many cases no spontaneous deviation of either the hand or the arm could be observed—although a lesion actually did exist in the ipsilateral hemisphere of the small brain—because the large brain had already noted and compensated this innervation defect in the cerebellum, then the removal of such compensation by diverting the attention should allow the latent pointing-deviation once more to become apparent.

With this end in view he determined to instruct the patient to perform some complicated action with the opposite hand whilst testing the diseased side, thinking the psychomotor area would thus be so occupied therewith as to eliminate its influence over the less complicated action on the side under observation. Reich therefore made the patient, in whom the usual tests had proved negative, follow one of his (Reich's) fingers with a finger of the healthy side, at the same time carrying out the pointing test on the diseased side, with the result that he obtained a constant deviation on the diseased side. This method was also enhanced by making the action on the opposite side take place from the shoulder-joint whilst the diseased side was tested only by a movement from the

wrist-joint. With continued application of this device, however, the large brain might become educated, as it were, to control both the complicated action on the sound side and also the deviation on the diseased side, so that it was necessary to change the complicated movement from time to time. The efficacy of these methods he had confirmed by experiment on normal people, and they could also be similarly utilised in testing the vestibular pointing reactions.

Fistula Symptom and Head Nystagmus.—**Ruttin.**—The patient was a man, aged forty-two, in whom a left otorrhœa had existed since childhood. Treatment six years ago at the hands of an aural surgeon had resulted in cessation of the discharge, which, however, in the last two weeks had recurred together with giddiness and subjective apparent rotation of objects. The giddiness had subsided during the last week.

Examination: Right side, dry perforation; left slight purulent antral discharge. Cv., right at 1 m., left *ad coch.* Tested with noise apparatus. Weber to the right, Rinne both sides negative with shortened bone-conduction. C₁ and C₄ much reduced both sides. No spontaneous nystagmus. Fistular symptom left, positive with typical nystagmus to the left on compression, simultaneously with which head-nystagmus to the right occurred. These phenomena were quite obvious and constantly demonstrated for a week, after which the patient was sent home at his own wish. Ten days later both fistular symptom and head-nystagmus could not be elicited. The caloric reaction—tested with an ether spray—had been typical both sides, and the after-rotation nystagmus was about twelve seconds on each side. This test, however, was peculiar in the fact that the right-directed rotatory nystagmus remained rotatory when the head was laid down on the left and did not become horizontal in character, whereas on the right side the usual conditions obtained. Therefore according to Hofer one had to diagnose the presence of a fistula into the left horizontal canal. Although the fistula symptom and head-nystagmus had disappeared the hearing and other reactions remained unaltered.

New Method of testing Spontaneous Head-movements and the reaction Head-movements under stimulus of the Vestibule

—**Bárány.**—A case of permanent wry-neck in which the presence of a cerebellar tumour was suspected was the reason that prompted Bárány to insist on the importance of testing "head-movements." Examination of the spontaneous and reaction movements in this instance showed all to be normal, so that Bárány considered he could thus exclude the presence of a tumour in the centre of the cerebellum, which should have been situated in the anterior superior lobe according to Bolk. The test is carried out in the following way: An apparatus devised by the author is applied to the patient—this apparently consists essentially in the provision of a rod secured to the patient's head, on the distal end of which the eyes are fixed ("Blickfixator.") The patient is now instructed to touch the end of the finger of the observer with the tip of the rod, then to lower the head and raise it again so as to touch the finger with the rod again. If this is attempted whilst a horizontal nystagmus to the left is induced the head is seen to deviate to the right. Similarly in order to test the upward and downward deviation associated with a vertical nystagmus the head is moved to the right or left. Further, if the "Blickfixator" be arranged so as to point directly upward then deviation in the coronal plane can be noted in cases of rotatory nystagmus.

Bárány had not yet applied this test to pathological cases. If the

patient be instructed to hold the head rigid and attempt to touch the end of the finger of the observer with the tip of the rod the movements of the muscles of the back can be tested in cases of horizontal or rotatory nystagmus—a point which should prove of value in those cases which are unable to stand.

Alex. R. Tweedie.

PROCEEDINGS OF THE AMERICAN LARYNGOLOGICAL, RHINOLOGICAL, AND OTOLOGICAL SOCIETY.

Seventeenth Annual Meeting, Atlantic City, June 1, 2, and 3, 1911.

Report by DR. L. M. INGRAM.

Thursday, June 1, 1911.

(Continued from p. 232.)

Discussion on Atypical Mastoiditis.—Introduced by **Dr. Eugene A. Crockett** (Boston).—Atypical mastoid disease is not only far more common than is ordinarily supposed, but its early recognition is very important on account of the fact that the intra-cranial complications of acute mastoid infection are more common in this variety of mastoid diseases than in any other. The same may be said of thrombosis of the lateral sinus and of general septicemia. Atypical disease of the mastoid process occurs by reason of an abnormal type of mastoid bone rather than from any other aetiological factor. It will be seen just as commonly after a simple influenza infection as it will be after a pneumococcus infection or scarlet fever, typhoid fever, etc. In all cases where mastoid disease is suspected and cannot be proved it is well to remember that a carefully taken X-ray picture of the mastoid furnishes an absolutely correct means of determining what process is present in the temporal bone. It should also be remembered that such a process may be quite devoid of local or general symptoms sufficiently severe for diagnostic purpose; that it may exist in cases in which there is only an indefinite history of discharge from the ear and which present a normal drum membrane and canal wall. These are the cases of so-called primary mastoiditis. The presence of swelling of the posterior-superior canal wall, when present, is of decided importance in making a definite diagnosis.

Dr. JAMES A. STUCKY said that certain anatomical conditions favour the development of atypical or symptomless mastoiditis. Heine described these as cases (*a*) in which a thickened tympanic membrane resists the suppurative process, and pus breaks through the annular ligament of the stapes, infecting the labyrinth, from which purulent meningitis results, ending in death. (*b*) In which there is a large aditus ad antrum and the mastoid cells are situated externally to the lateral sinus. (*c*) In which there is a diploic mastoid process with a medium-sized antrum and large cells extending into the root of the zygoma. (*d*) In which there is a very thick or sclerosed cortex. The author's experience accorded with that of Barnhill, Heine and others, (1) that suppuration may take place in the mastoid antrum, mastoid cells or both, and may even be

complicated by intra-cranial abscess, without the drum membrane even having ruptured, and, consequently, without the ear having discharged. (2) That mastoid abscess without any of its complications may occur, or at least assume a form of dangerous activity, months or years after a suppurating ear has apparently healed, at least after the perforation in the drum membrane has healed and all external discharge has ceased. In such cases some infective focus of pus has remained latent in the temporal bone. A case in point was cited. Atypical mastoiditis is most frequently met in the exanthematous diseases, diabetes, typhoid fever, pneumonia, and influenza. Often a diagnosis can be made only by exclusion. The special value in these cases of frequent differential blood count, percussion, and transillumination of the mastoid process was emphasised. When in doubt, however, the mastoid should be explored. The present knowledge of the disease and the perfection of technique in operation do not justify one, in the face of the elements of uncertainty and possible dangers, in preserving a hesitating attitude in doubtful cases.

Dr. THOMAS J. HARRIS (New York City) said that the term "atypical mastoiditis" might be applied to inflammation of the mastoid without perforation of the drum membrane. Cases of this character may be considered under the following heads: (1) Primary mastoiditis—an inflammatory process beginning in the mastoid bone without previous involvement of the middle ear. (2) Latent mastoiditis—where the infection of the mastoid has proceeded from the middle ear, the involvement of the latter not being sufficient to cause rupture of the drum membrane, or, in some cases, even to produce any changes in its appearance. (3) Hysterical mastoiditis or mastoidalgia—which occurs chiefly in females, first, without associated disease of the ear; second, in the presence of acute inflammation of the middle ear; third, where an inflammation, suppurative or otherwise, of the middle ear has previously existed. (4) Condensing or sclerosing mastoiditis, formerly regarded as a distinct entity, but now believed to be identical in the main with mastoidalgia, a pseudo-mastoiditis, in no sense a true entity. (5) Syphilitic mastoiditis—a rare form occurring in syphilitic patients, in which, with a normal ear-drum, there is excessive tenderness over the mastoid process, with a history of discharge from the ear.

Dr. FRANK ALLPORT (Chicago) said that he had seen so many cases of atypical mastoid diseases that he sometimes wondered if there were any really typical cases. One of the most interesting and important points suggested by this series of papers is the frequency with which one encounters cases of mastoiditis which present very few of these characteristic symptoms which we are led to believe are dependable operative signs. He referred to those cases in which there is no drooping of the meatal wall, no mastoid tenderness, no swelling, no temperature, and in which the blood-count is not significant. He had not had much experience with X-ray diagnosis, but believed that it held great promise for the future as soon as better pictures could be made and we had acquired the ability to interpret the significance of such pictures. As a rule diagnosis must be made from the general picture presented by the patient, everything being taken into consideration; and it should always be borne in mind, as Dr. Stucky had stated, that one cannot afford to maintain a hesitating policy. He had never seen a case harmed by a simple mastoid operation, but he had seen many lamentable results follow the tardy performance of the operation. He did not know what Dr. Stucky meant by exploratory operation. He

did not see how one could very well explore the mastoid cavity without performing an actual mastoid operation. He presumed that Dr. Stucky meant that the operation should be performed along classical lines, and then the interior of the bone examined in the search for pathological conditions. He remembered a case reported by him some years ago in which the patient complained of sudden and severe pain in the mastoid bone. The physician requested that the mastoid be opened, but Dr. Allport could not see his way clear to the performance of the operation at that time. He believed it to be a case of neuralgia, and advised treatment therefor. There was no swelling over the mastoid, no tenderness, no drooping of the meatal wall, no perforation of the drum-head, a perfectly normal drum-head, there was no temperature, and the blood-count was not significant. Nevertheless the patient passed a miserable summer, and finally returned again in the autumn with a request from the family physician that the mastoid be opened. Dr. Allport reluctantly consented to open the mastoid, and declared that he had never seen a more destructive process than that in this case. Whether it was a case of primary mastoiditis or not he did not know. In fact, he could not say positively from his own experience that there were any real cases of primary mastoiditis, although he presumed, from the writings of other men, that such cases must exist. This patient positively asserted that she had never in her life had earache or discharge from her ear, and the appearance of her drum-head certainly bore out her statement. Dr. Allport cited another case of what appeared to be primary mastoiditis in a child six months of age. There were no discernible signs of middle-ear disease and no history of such a disease, and yet the child had a distinct mastoiditis. Still, he felt that possibly a middle-ear abscess might have existed for a few days, and the parents, who were ignorant people, might not have noticed it. Dr. Allport was inclined to think that the cases of mastoidalgia mentioned by Dr. Harris were very rare. He remembered seeing such a case a year or so ago in the person of an old maid of neurotic disposition who consulted him for intense pain in the mastoid process. This was the only symptom she had. The mastoid bone was opened for relief of the pain. No disease was found, but the bone was extremely sclerotic. The operation effected a cure. Whether there was nerve-depression caused by the sclerosed bone he did not know, but at all events the patient was cured by the operation and had not complained since. He believed that one is justified in opening the mastoid in cases of persistent pain in that region, even in the absence of other symptoms, as no harm can come from a properly performed mastoid operation.

Dr. GEORGE A. LELAND (Boston) had been much interested in the papers, but particularly in Dr. Harris's classification of cases of atypical mastoiditis. It had seemed to him, however, that it is impossible to classify them very definitely and distinctly because they are of such infinite variety. To paraphrase a recent light opera song, he had never seen two mastoids alike, nor ever seen one alike twice. As knowledge increases, however, it is probable that classifications will be modified, because the diagnosis will be made before the mastoid becomes really what is now considered typical. During the past few years in the City Hospital, in order to save time both for the hospital and the patient, and for the sake of the hearing, early operations have been done, not waiting for typical classical symptoms, and hence, as it is natural to suppose, the early symptoms would present a variety which it would be difficult to put in strict classes. Hence a very large majority of them would not be classified as typical according to the definition of to-day. It seems to

him that mastoid cases can be put into two large groups: Those in which the symptoms, edema or inflammatory swelling, or pain with tenderness and projection of the auricle, might be considered the obvious group; and those in which none of these symptoms are present, but in which the discharge is greater than could possibly come from the small tympanic cavity, and in which the drum-head refuses to heal and is associated with more or less swelling of the flaccid part together with that of the periphery, which would be equally typical, but not obvious, and which might also be called typical. These are cases where valuable time is lost because the general practitioner, or perhaps the conservative specialist, has to wait for obvious signs. Special attention should be called to this type, so that they may be continually brought to the attention of the general practitioner. This latter variety does not include those of the Bezold type in which the swelling is on the inside, and equally obvious from its own peculiar symptoms of headache, stiffness of the jaw and neck, and deep tenderness around the mastoid tip. The symptom mentioned by Dr. Crockett and others, of a discharge too profuse to be attributed to the tympanum alone, has long been a guiding symptom in our hospital. If the discharge is copious enough to run from the canal and stain the pillow, especially at night, or to necessitate frequent changing of cotton wicks, it is evident that it must come from the antrum or some of the contiguous cells. If the walls at the periphery of the drum-head are prolapsed, with a scanty discharge without pain or temperature, it may mean that the mastoid is involved or it may not. These cases require constant watching and careful observation so as to be sure of a definite diagnosis, especially in absence of all the classical symptoms. There was one symptom he had not seen mentioned, and that is, transient pain coming in the middle of the night for a short time only, the first night perhaps for fifteen minutes, about eleven o'clock or perhaps up to one o'clock, when the discharge is more or less copious. The next night or so it may last for half an hour, and if allowed to go on it may increase up to two or three hours. This nocturnal pain he had found in a great majority of cases to mean that the mastoid operation would be inevitable sooner or later, and it usually could be depended upon to drive the reluctant patient to accept operation. He had found the mastoid always to be involved in these cases; but if it is opened early there may be scarcely any evidence of true pus, except by microscopic examination, and if opened later there may be only one or a few separate foci at the purulent breaking-point. Elevation of temperature is by no means always present, even with the mastoid full of pus, and when present means absorption, so that the frequent remark of the general practitioner that there can be no trouble because of no temperature shows that he is not conversant with this fact. The rule lately laid down by Uchermann, although not specially new, is a good one to follow, namely, that in acute suppurative otitis media, if temperature lasts up to the eighth day, despite frequent paracentesis, the mastoid should be opened even in the absence of tenderness over the process, or other classical symptoms. Dr. Leland cited the case of a lady who had a thickened perforated drum-head with profuse discharge, with red, slightly swollen periphery, who was not confined to the house, but who had been treated for two years for the relief of the discharge without effect. Classical symptoms were entirely absent, although pressure elicited slight pain. This, however, is not conclusive, because deep pressure over the normal mastoid will sometimes cause pain. Finally, in order to get rid of the discharge, operation was submitted to.

The outer cortex was found to be about a quarter of an inch thick, hard and white, but the inner table was destroyed over an area as large as a quarter of a dollar, and granulations covered the dura and sinus, a large area of the inner cortex being absent. There were present the so-called protective granulations which saved the patient from extension inward. This condition of affairs may be found even in acute cases. In another recent case, a man of about thirty-five years of age had had measles two months before, but came into the hospital complaining of slight pain, especially at night, and slight discharge. There were no other external symptoms. Upon operation the mastoid was filled with much thickened granulations, which caused extensive absorption of the trabeculae, more or less complete, and the inner cortex was largely absent. It seemed strange that this should have taken place in two months, although it only emphasises the destruction which may sometimes occur as a sequel of measles. Dr. Leland had not had much success with the X rays, perhaps because his experience has been limited or unfortunate. He congratulated Dr. Crockett upon his first case as detailed. He did not agree with Dr. Crockett that leucocytosis is a late symptom. It is sometimes noted early in the disease. He cited a recent case in which acute epidemic tonsillitis was accompanied by acute middle-ear disease. Multiple incisions were made in the drum-head on two different occasions, after each of which the temperature subsided. There was no redness, swelling, or tenderness over the mastoid process, and the only sign of mastoid involvement was that the discharge would not cease, nor would the membrane heal. Temperature began to rise with the drum-head well open. Case began April 29. First paracentesis was made May 3, with relief of all aural symptoms, except considerable serous discharge. On May 12 slight increase of temperature, and 14,000 white blood-corpuscles. On May 15 there was slight pain on pressure on the mastoid, but no other symptoms. Paracentesis gave no relief. On the 16th the temperature rose to the vicinity of 103° F. Pain appeared, and tenderness in the left ankle, and at about six-hour intervals the left knee became involved, then the right ankle, the right knee, the left wrist, the right wrist, the right elbow, and the left elbow, together with slight pains in both hips and shoulders, with temperature of about 104° F. Blood culture was negative. Discharge from ear showed streptococcus and from the throat strepto- and pneumococcus. This was a very pretty case of acute articular rheumatism. The tonsils had been burned down to stumps in the City of New York, one, however, having a slight amount of cheesy detritus only. It was concluded that the mastoid was the only source of infection. The blood-count showed 14,000 whites with 83 per cent. of polymorphonuclears. On the 18th the mastoid was opened, and although no distinct pus was observed, the culture showed streptococcus, staphylococcus, and pneumococcus, with microscopic evidence of necrotic bone. The inner cortex was somewhat softened, the sinus wall slightly opaque and smeared with a thin exudate, easily wiped off. The sinus was opened and the flow very free; plugged above, there was copious bleeding from below, and plugged below only slightly greater flow from above. On the next day the joint-troubles began to subside, and on the 20th, although the whites were still 14,000, the polymorphs had diminished to 79 per cent., and the case went on to rapid recovery without incident. It might be observed that here he had to do with a case of bacteraemia rather than septicæmia. Mastoidalgia had been mentioned by Dr. Harris, and the speaker called attention to the fact that in these cases sometimes a large swollen and

inflamed condition of the posterior pharyngeal lymphatic band running up behind the posterior faucial pillar was found. In this case there was also apt to be pulsating low-toned tinnitus, when it would be found that this swelling involved also the region of the Eustachian tube, usually without involvement of the ear or diminution of hearing. Strong astringents applied to this band would usually clear up the symptoms.

Dr. EWING W. DAY (Pittsburg) said the fact that no symptoms are present at the time the patient is examined does not signify that there were none previously. If it were possible to follow a case from the beginning, symptoms would probably be found at some time in the course of the disease. In this class of case, when the mastoid is opened, the disease is found to have extended to the dura. The very fact that it has extended to the dura accounts for the absence of pressure-symptoms at the time the patient presents himself. These are the most dangerous cases. He had never been able to derive any information from the blood-count in mastoiditis limited to the bone. The effect upon the blood-stream from bone-absorption is almost *nil* in such cases, and when the blood-stream is affected the disease has progressed beyond the mastoid. He had had X-ray pictures made in several cases, and whether it was the fault of the plates or of his inability to read them he did not know, but they had been of no assistance to him.

Dr. S. J. KOPETZKY (New York City) held that in classifying these cases as atypical mastoiditis, if one excludes those so classed because of a strictly anatomical basis, and considers the rest of these cases from the clinical standpoint, that then one will find symptoms commonly present in each group and significant for each clinical group. For example, the atypical mastoiditis caused by an infection of the pneumococcus show an invasion which subsides in one portion of the invaded area, only to light up later in another section. The middle ear may be entirely normal by the time the lesion is evident in the mastoid process proper. This is atypical of the general run of mastoiditis, but it is typical enough for a pneumococcus invasion of the middle-ear spaces. Other examples of groups of cases acting alike under similar conditions of infection might be cited to substantiate this contention. In regard to the cases of so-called "latent mastoiditis," it would be of moment to study what takes place in the cases of mastoiditis in which resolution occurs. Dr. Barnhill said his case was one of latent mastoiditis of seven years' standing. The speaker doubted the latency of the disease for such a period, and called attention to the following: In the first place, in cases clinically nothing more than purulent otitis media it has been observed that the cells in the mastoid process are filled more or less with pus. This is so, even when there are absolutely no signs of mastoiditis present. Furthermore, in cases of fully developed mastoiditis giving classical symptoms in which resolution takes place (as it often does), the tympanic cavity eventually becomes dry, the changes taking place within the cortex are of moment in this discussion. The bony intercellular walls which are in part destroyed are not re-formed. The disintegrated mass becomes partly absorbed and mostly organised by the growth of blood-vessels and connective tissue. The case is then cured, and the patient cannot be said to have latent mastoiditis. In this given case the patient is in a similar state to one upon whom a simple mastoidectomy has been performed, and the wound in the mastoid process has become filled up with granulation-tissue and the skin and periosteum have grown over and covered the wound area. An invasion by micro-organisms seven years later might in all the above examples, or in any one of the incidences,

set up an acute infection of the middle-ear spaces and produce a profound disintegration of the granulation connective tissue in the mastoid process. In the resolved case it is no more the manifest stage of a long-drawn-out latent mastoiditis than it is in the breaking down of the wound area in the case operated on. To the speaker's mind the latency of Dr. Barnhill's case bespoke resolution, and, seven years later, an acute infection with resultant acute mastoiditis. Dr. Kopetzky did not believe that suggestion had much to do with affording the relief where operation was undertaken in cases of mastoidalgia, nor did he believe mastoidalgia to come within the classification of atypical mastoiditis. He thought the relief was obtained because the nerves in the periosteum were severed during the operation, and suggested that in such cases operative procedures might be limited to incision and retraction of the periosteum where there was no pus in the mastoid process. Replying to Dr. Beck, he said that since Dr. Beck had questioned his statements, he took the liberty of placing the factors upon which they were based before the meeting. That the pus invades all the cells of the mastoid process in cases which we are habitually diagnosing as acute otitis media purulenta from the clinical standpoint, is borne out by the investigations of Politzer and Bezold, and especially by the work of Bönninghaus. Radiograms of such cases which give no mastoid symptoms at all, and which are in no sense to be considered as mastoid cases, show when compared with radiograms of the opposite ear the distinct general cloudiness which, interpreted, means pus within the cells. In the other cases, according to Bezold in 9 per cent. of the cases, the bone of the mastoid process becomes involved in a destructive process which Bönninghaus has termed an "osteitis rarificans simplex." The destruction of the walls separating the cells within the mastoid process, and the changes which occur after resolution sets in whereby the larger spaces caused by this bone-absorption is filled in with granulation-tissue, were described in 1904 by Scheibe. Bönninghaus, citing Scheibe, states that while some bony deposits may form in the usual way from osteoblasts, this is only a very limited process. The radiograms of acute mastoiditis and the study of the pathological findings on the operating table further substantiate these observations and contentions.

Dr. WALTER A. WELLS (Washington) mentioned the case of a physician who was visiting another physician, and who had been having some indefinite trouble with his ear. Though the trouble had existed six weeks there had never been any sign of suppuration, no pain, except at the commencement, and no severe headache. He had been under the care of several physicians in New York and elsewhere, but no one had suggested a mastoid involvement. When the speaker first saw the patient there were beginning to appear symptoms over the mastoid process. He could hear at ten or twelve inches a watch that ordinarily he could hear at thirty inches. As the drum membrane looked suspicious paracentesis was made, but no pus appeared. In a day or two there was a little discharge, which proved to be staphylococcus, with a few chains of streptococcus. With the appearance of the discharge the oedematous condition over the mastoid disappeared. The physician whom the patient was visiting discouraged operation. The speaker operated, however, and found the mastoid tip absolutely rotten. The cortex covering the antrum was very thick, but the entire tip was broken down completely. The patient had lost ten or fifteen pounds, and was extremely prostrated before operation. This prostration will often guide one to a considerable extent in deciding whether to operate.

Dr. MAX A. GOLDSTEIN (St. Louis) said there had been many references to atypical cases in which there was a dearth of symptoms, and in which destruction proved to be extensive. He presumed that if these cases had been examined bacteriologically they would have been found to be tuberculous. He had reported three cases in which tubercle bacilli were demonstrated in the pus and granulations. The *Bacillus tuberculosis*, the *Bacillus mucosus*, or some other slow-working bacillus, is undoubtedly present in that class of cases which are so atypical in variety.

Dr. STUCKY, in closing the discussion, said he had seen two cases of atypical mastoiditis in children under two years of age, in which there were absolutely no symptoms at all until the patient had convulsions. There was a little bulging behind the ear in one case which, when opened, proved to be an epidural abscess. He had reported one case of traumatic mastoiditis. He had also had tuberculous cases in which there were tuberculous glands behind the ear, with no history of middle-ear disease. The exploratory operation, which Dr. Allport did not understand, meant the same thing to the otologist who opens the mastoid as to the abdominal surgeon who opens the abdomen. He did not agree with Dr. Day with reference to absorption. If the abscess is walled off there may be no absorption, but a blood-count taken twice daily would give indication of trouble.

(To be continued.)

Abstracts.

NOSE.

Landolt, E. (Paris).—Treatment of Diplopia from Paralysis of the Superior Oblique after Frontal Sinus Operations. "Trans. Ophthal. Soc.," vol. xxxi, 1911.

In referring to operations on parts adjacent to the eyeball, the author states that those on the sinuses seldom come within the ophthalmologist's range. As an ophthalmologist he writes as follows: "The most common of them are those that are performed on the frontal sinus, and they are more in the province of the rhinologist—at least to begin with, for after the operation for sinusitis the patients sometimes come to us. The chisel has overstepped the mark and has entered our domain at the level of the pulley for the *obliquus superior*. Paralysis of this muscle gives rise to very troublesome diplopia. Fortunately, by advancing the *rectus inferior* that works in conjunction with the *superior oblique*, we possess an excellent method for re-establishing the harmonious working of the two eyes." He states that he has published several cases in which this operation gave such favourable results that the patients enjoyed binocular vision, as well for near as for distant objects, and, what is equally important, throughout the field of vision required by their work.

[In this interesting paragraph from his Bowman Lecture on Ophthalmic Surgery the well-known ophthalmologist, Dr. Landolt, of Paris, refers to the diplopia produced by paralysis of the *superior oblique* following interference with the trochlea during the operation for frontal sinus suppuration. When this has occurred he advocates, as an excellent method for re-establishing the harmonious work of the two eyes, the advancement of the *rectus inferior* which works in conjunction with the

superior oblique. The knowledge of this resource will be very comforting both to patients and operators, and when necessary we shall gratefully appeal for aid to the ophthalmic surgeon. It is, of course, only in a very small minority of cases that this will be so, and it must be surprising to those who have witnessed the performance of radical operations on the frontal sinus that diplopia is not a more constant and persistent result. When it does occur it is usually quite transitory, the reason for this no doubt being that the degree of contraction of the muscles is regulated by the amount of movement required to harmonise the direction of the optic axis with that of the other eye. It must also be a matter of surprise that in many cases, even of considerable displacement of the trochlea, no diplopia is experienced at all. Exceptionally, however, this happy course of events does not ensue. The most serious and lasting cases of diplopia are undoubtedly those in which the cause is not simply a defect in the action of the superior oblique muscle, but a mechanical interference with the movement of the eyeball induced by inflammatory products which infiltrate the tissues around the eyeball and hamper it in its movements. In these cases we can scarcely hope for any benefit from operations, however skilful; but with proper skill in operation and adequate care in regard to the accomplishment of asepsis, this unhappy residuum of cases, in which the only resource is the covering up of the eye, may be eliminated.]

Dundas Grant.

LARYNX.

Moller, Gorgen (Copenhagen).—**Epiglottis Amputation in Laryngeal Tuberculosis.** "Zeitschr. f. Laryngol.," Bd. iv, Heft. 4.

Möller has operated on twenty-five cases, ten of which he has reported previously. The results in his last fifteen cases have not been so good as in the first series, and Möller thinks this is due to his not being so particular in the selection of his cases. In six of the last series the lung condition was very bad, and in only one case did he obtain a cure. In seven of the fifteen cases, however, the dysphagia was at once relieved. In all but two of the cases he removed the epiglottis with one application of Alexander's instrument. [It is presumed that he means the projecting part of the epiglottis.—Abs.] He gives the following indications for the operation: (1) Tuberculosis entirely, or almost entirely, confined to the epiglottis in cases in which the patient is able to stand operation. (2) Cases of very severe dysphagia apart from the condition of the lung if the epiglottis appears to be the cause of the difficulty on swallowing. (3) Tuberculosis of the epiglottis in cases of extensive laryngeal tubercle even if there is no dysphagia. The lung affection, however, must be absent or so slight that the prognosis is good.

J. S. Fraser.

Blumenfeld, Prof.—**Tuberculin Treatment in Tuberculosis of the Upper Air-passages in Adults.** "Zeitschr. f. Laryngol.," Bd. iv, Heft 4.

Blumenfeld remarks that every change in the larynx of a tubercular patient is not necessarily of a tubercular nature, and therefore may be uninfluenced by tuberculin treatment. He further calls attention to the fact that tuberculin immunity, *i. e.* tolerance to large doses of tuberculin, is not the same thing as tuberculosis immunity. The reaction after an injection of tuberculin occurs in the middle layer of the tubercular

deposit, and not in the central zone of caseation nor in the peripheral zone of small-cell infiltration. This intermediate layer is not always present and, in these cases, the reaction does not occur. Blumenfeld remarks that *many cases of tuberculosis of the larynx are very difficult to diagnose, and that in them a tuberculin reaction is of very great importance*; on account of the inflammatory reaction the patient may become hoarse for a day or two. Cases with fever and anæmia are not suited for tuberculin, and those with tubercular deposits and tumours are not so successful as those with ulceration; cases with elongated ulcers on the vocal cords react specially well. Perichondritis and infiltration of the epiglottis do not do well. Blumenfeld considers it advisable to combine open-air methods with tuberculin. *Dosage*.—In the first tuberculin era—the period of too large doses—acute destruction often followed the injection of tuberculin. The tendency now is to begin with minute doses and only gradually to increase them. Blumenfeld records a case treated for a period of four months. The initial dose was 0.0001 c.cm. and the final dose 1 c.cm. Thirty-four doses in all were given; the patient recovered. Blumenfeld states that if a marked reaction occurs the dose should be diminished. He now thinks it better to stop after reaching .5 c.cm. and then, after an interval, to begin a fresh period of tuberculin treatment. The reports of various writers differ markedly with regard to the results obtained from tuberculin treatment. Von Ruck, Zander and Springthorpe record good results, but the majority of writers are against the use of tuberculin in laryngeal cases. Blumenfeld himself only uses it in obstinate cases. He has observed four in which curettage, cautery and lactic acid failed, do well after tuberculin injections. Like Heryng, he does not believe in the 50 per cent. or 60 per cent. of cures recorded by some writers, and thinks 5 per cent. or 6 per cent. is much nearer the mark. Blumenfeld is of opinion that tuberculin alone can do very little. It may, however, in favourable cases be an aid to local treatment.

J. S. Fraser.

REVIEWS.

The Accessory Sinuses of the Nose in Children. By A. ONÓDI. (Translated by CARL PRAUSNITZ.) 102 plates. London: John Bale, Sons and Danielsson, Ltd., 1911. 21s. net.

Prof. Onódi's former works on the clinical anatomy of the nose and nasal accessory sinuses have so greatly enriched our knowledge of these important regions that one turns to this, his latest contribution, with every expectation that valuable fresh light will be thrown on the subject with which it deals, and that the matter will be presented in the most attractive form. We cordially congratulate our distinguished colleague, and also the translator, on the result of their labours. One hundred and two specimens are reproduced in natural size from photographs, each specimen being described so as to enable the reader to grasp the points of interest and importance attaching to the corresponding plate. The main object of the work is the study of the development of the sinuses from their first appearance until after the beginning of puberty, and it is

in the selection and presentment of the series of specimens that Onódi's work will prove so useful and acceptable. This is well expressed by Prof. Waldeyer in his introduction, when he states that "from the practical point of view, the illustrations and measurements given in this book appear to me to have considerable importance, particularly for the diagnosis and operative treatment of the accessory sinuses in children, since they enable the surgeon to select and to follow up the best route of access to such cavities." The material from which the illustrations have been prepared was obtained from fetuses of six and a half months, newborn children, and children ranging from one to nineteen years of age, and it is a most complete series.

While the author is to be congratulated, a word of praise is due to the publishers, for the printing is well done and every plate is beautifully reproduced.
P. Watson-Williams.

The Brain and Voice in Speech and Song. By F. W. MOTT, F.R.S., M.D., F.R.C.P. Pp. 112. London & New York: Harper Bros., 1910.

A work on this subject must necessarily appeal to all voice specialists and laryngologists as a special aspect of their specialty and as a study of it from a point of view somewhat different from their habitual one. The fact of its having issued from the pen of Dr. Mott gives it the cachet of absolute authoritativeness. Its central portion consists of a consideration of the vocal instrument and its three parts. This is familiar ground, but it is quite worth traversing again under the guidance of Dr. Mott. He has brought its description quite up date and has drawn from all the available sources of information so as to make it acceptable and instructive to the practitioner, while he has couched it in such clear terms that it is intelligible to any educated reader.

To us the most interesting portions are those which deal with the psychological and neurological relations of the organs of voice. We may cite the short discussion as to the origin of speech, whether arising from the elemental cry or from an imitation of the movements of the mouth, or whether, again, it is an instinct not evolved, but breaking forth spontaneously. A tribute is paid to the memory of Goll, who, in spite of his error in considering the bumps of the skull as indicative of the development of the various faculties, was the pioneer of cerebral localisation (p. 69). Dr. Mott is a convinced supporter of right-handedness as against ambidexterity (p. 72). The doubts cast of late by M. Marie on the significance of the fundamental observations of Broca are fully considered.

Dr. Mott discusses the question as to whether words are received as the recollections of movements of the speech organs (Stricker) or as auditory images in favour of the latter. As one very strong argument he narrates at length a case in which disease confined to the auditory centres on the two sides caused not merely complete deafness, but also loss of speech, the mental faculties, so far as could be made out under the circumstances, remaining unimpaired.

Voice in relation to song is sympathetically analysed, and the necessity of a psychic as well as a physiological mechanism is feelingly insisted upon. "Dramatic song," the writer concludes, "therefore, that does not evoke an emotional response is *vox et preterea nihil*."

The physical, the anatomical, the physiological and the psychical factors receive the fullest exposition and illustration in this exceptional work.
Dundas Grant.

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**REPORTS FOR THE YEARS 1910 AND 1911 FROM THE
EAR AND THROAT DEPARTMENT OF THE ROYAL
INFIRMARY, EDINBURGH.**

Under the charge of A. LOGAN TURNER, M.D., F.R.C.S.E., F.R.S.E.

IV.

**A CONTRIBUTION TO SERUM AND VACCINE THERAPY
IN THE TREATMENT OF INTRA-CRANIAL COMPLI-
CATIONS OF MIDDLE-EAR SUPPURATION.**

BY A. LOGAN TURNER, M.D., F.R.C.S.E.

IN a recent discussion upon "The Factors which Conduce to the Successful Treatment of Brain Abscess," at a meeting of the Otological Section of the Royal Society of Medicine, reference was made to the use of serum and vaccines as additional therapeutic measures. It is with the object of recording our own experience in this connection, without reference to the work of others, that the following cases of intra-cranial complication of ear disease are published. The cases have not been detailed in full, our intention being merely to emphasise those points which have a more direct bearing upon the subject under consideration.

SERUM THERAPY.

The following five cases were treated with anti-streptococcic serum subsequent to operation; three recovered and two died. Four were cases of chronic middle-ear suppuration, one of them associated with disease of the labyrinth, while the fifth was a case of acute otitis media with labyrinthine symptoms. The intra-cranial complications were as follows: Acute lepto-meningitis in three, sigmoid sinus thrombosis in one, and serous meningitis in one. Two of the cases of acute lepto-meningitis and the case of serous meningitis recovered; one case of lepto-meningitis and the case of sinus thrombosis were fatal.

CASE 1.—W. L—, aged sixteen. Chronic middle-ear suppuration (L.) and purulent meningitis; recovery. The patient had been seriously ill for one week before his admission; vomiting, vertigo and headache, with elevation of temperature; no rigors. On admission, November 10, temperature 100° F., pulse 68, respirations 18. Looked ill; frontal headache; neck rigidity; veins of the fundus dilated in both eyes; no Kernig; superficial and deep reflexes normal. Cerebro-spinal fluid under pressure and turbid; a quantity of albumen; polymorphonuclears 40 per cent.; lymphocytes 60 per cent.; no organisms seen in films; no growth obtained in broth. Complete mastoid operation; middle-ear cleft contained *Streptococcus pyogenes*, *Bacillus proteus vulgaris*, a Gram-positive anaërobe. November 11, 12, 13, 14, temperature 99° to 102° 8; severe headache; no vomiting. November 12, temperature 102° 8. 10 c.c. anti-streptococcic serum subcutaneously; no definite effect on the temperature. November 14, temperature 101° 6; headache; neck rigidity; double Kernig. Leucocytosis 15,300; polymorphonuclears, 91 per cent. Cerebro-spinal fluid turbid; pus deposit; polymorphonuclears 70 per cent.; lymphocytes 30 per cent.; *Streptococcus pyogenes*, *Bacillus proteus vulgaris*, a Gram-positive anaërobe obtained. 10 c.c. anti-streptococcic serum subcutaneously. November 15, temperature normal, a small quantity of cerebro-spinal fluid withdrawn, and 10 c.c. of anti-streptococcic serum administered, 5 c.c. into the spinal canal. Temperature in the evening 100° 4. November 16, cerebro-spinal fluid again withdrawn, and 10 c.c. anti-streptococcic serum injected into spinal canal. Examination of this specimen of cerebro-spinal fluid, i. e. the fluid from the fourth puncture after three doses of serum, showed a mere trace of albumen, a few polymorphonuclears and lymphocytes and no organisms on culture. November 17, temperature 100° 4. During the following eight days the temperature ranged from 98° 4 and 99° to 101°. Three further doses of anti-streptococcic serum were given subcutaneously during this period. Leucocytosis fell to 8600. The patient's general condition varied a little from day to day. Twenty days after admission his symptoms had disappeared and he commenced to put on weight. He was discharged cured.

CASE 2.—J. R—, aged twenty-nine. Chronic middle-ear suppuration (L.); labyrinthine disease and meningitis; recovery. The patient had had acute symptoms for one week, namely, fever, headache and vomiting. He had also emaciated. He had complained a good deal of vertigo. On admission, June 11 temperature was 99° F., pulse 100; leucocytosis 11,000. He had neck rigidity and pain on moving the head; double Kernig; frontal headache. There was well-marked spontaneous nystagmus on looking to the right or healthy side only.

The radical mastoid operation and a double vestibulotomy were performed, the external semi-circular canal containing a greenish-coloured fluid. The cerebro-spinal fluid removed by lumbar puncture was under slight pressure; turbid; alkaline; contained a considerable quantity of albumen; no reduction of Fehling; many polymorphonuclears and a few lymphocytes; degenerated endothelial cells; no organisms. From the mastoid cells and labyrinth secretion the following organisms were grown: *Streptococcus pyogenes*, a diphtheroid bacillus and a Gram-negative bacillus. On the following day, June 12, the temperature was normal; pulse 102. A second lumbar puncture was made, and after withdrawal of fluid 10 c.c. of anti-streptococcic serum were injected, 5 c.c. into the spinal canal and 5 c.c. subcutaneously. Examination of the second specimen of cerebro-spinal fluid showed less turbidity, less albumen and fewer cells. Films revealed Gram-positive cocci, Gram-positive and Gram-negative bacilli, but no growth was obtained. Five c.c. of anti-streptococcic serum were again injected into the canal. The patient was feeling better; the temperature was normal and the pulse 92; there was still neck rigidity and double Kernig. June 13, temperature 99°, pulse 98. Cerebro-spinal fluid almost clear and containing a mere trace of albumen and a few cells. A few of the organisms above mentioned were still seen in films, but no growth was obtained. June 14: Temperature 100°. On the following day it fell to normal and remained so. Four days later the neck rigidity and Kernig sign disappeared and the patient was finally discharged.

CASE 3.—H. K—, aged nineteen. Acute middle-ear suppuration (L.), labyrinthitis and symptoms suggesting a serous meningitis. The patient had suffered from pain in the left ear intermittently for eight days. There was slight deafness, redness of the membrane but very little bulging. The temperature remained normal. On the evening of the ninth day there was severe pain, temperature 100.4° F.; pulse 100. Paracentesis was performed. On the morning of the tenth day temperature 101.8°, discharge from the ear and slight mastoid tenderness. At 11 p.m. the patient vomited. February 18 (eleventh day): Temperature 102.2° F. pulse 96; the patient had felt very sick all night and vomited again in the morning. The sickness was associated with severe vertigo, the bed constantly appearing to him to rise up. There was marked lateral nystagmus on deviating the eyes both to right and left. The patellar jerks were much exaggerated; double ankle clonus; plantar flexion; slight Kernig. Pain on moving the head. A high degree of deafness in the left ear; the medium tuning-fork was lateralised from the vertex to the sound side. The complete mastoid operation was performed; pus was found in the mastoid cells. The *Streptococcus pyogenes* was found in the pus. 10 p.m.: Temperature 100.2°; 10 c.c. of anti-streptococcic serum injected subcutaneously. February 19: a.m. temperature 100° and p.m. temperature 103°. The vertigo and vomiting had ceased, and the nystagmus, now less violent, was only observed on looking to the sound side. The pain in the neck and the Kernig sign were more marked. Lumbar puncture was performed and 10 c.c. of anti-streptococcic serum were injected, 5 c.c. into the spinal canal and 5 c.c. subcutaneously. The cerebro-spinal fluid was under considerable tension but clear. A distinct ring of albumen was obtained and the reduction of Fehling was incomplete; one or two polymorphonuclear cells but no organisms were observed. February 20: a.m. temperature normal; patient felt better; no giddiness, no nystagmus. P.m. temperature 100.2°. February 21: Temperature 101°; 10 c.c. of anti-streptococcic serum were injected subcutaneously. The temperature gradually fell to normal and the nerve symptoms disappeared.

CASE 4.—C. S—, aged seventeen. Chronic middle-ear suppuration (L.), labyrinthine suppuration and purulent meningitis; death. The patient had had

acute symptoms for nearly three weeks—fever, headache, vomiting and pain at the back of the neck. On admission temperature 102.8° F., pulse 121; headache; neck rigidity; paralysis of left external rectus; slight left facial paralysis; double Kernig; well-marked spontaneous nystagmus on looking to the healthy side; low voice heard at one foot from the diseased ear; B.C. > A.C.; T.F. on vertex lateralised to the diseased side. Although the history of the illness was a long one and the patient was obviously ill, operation was carried out. The complete mastoid operation and double vestibulotomy were performed, the external semi-circular canal containing pus and granulations: the facial nerve was found exposed in its canal. Lumbar puncture: The cerebro-spinal fluid was under tension and turbid; distinctly alkaline; a quantity of albumen: no reduction of Fehling; thick deposit on standing; many degenerated polymorphonuclears and occasional lymphocytes. Films made from the pus in the mastoid showed *Gram-positive cocci* and *Gram-positive bacilli*, but no growth was obtained in broth by aerobic methods of cultivation; no apparent growth occurred in broth, nor did agar plates inoculated from the broth show any growth. The cerebro-spinal fluid was found to contain *Gram-positive single cocci*, *Gram-positive bacilli* in large numbers and a few *Gram-negative bacilli*. The *Gram-positive bacilli* were carefully investigated by Dr. F. E. Reynolds, who regarded them as the *Bacillus aerogenes capsulatus*, while the *Gram-negative bacilli* found in broth culture were probably dead forms of the same organism; the *Gram-positive cocci* may have been coccal forms of the same organism. Ten c.c. of antistreptococcal serum were injected into the spinal canal after drawing off the cerebro-spinal fluid. On the following day the temperature fell to normal but the pulse remained rapid. Lumbar puncture was again performed and a second dose of the serum administered in the same way. The patient never rallied, however, the pulse varying from 125 to 144, and she died two days later. *Post-mortem* revealed very extensive purulent cerebro-spinal meningitis extending over the whole base of the brain and down the spinal cord.

CASE 5.—M. W.—, aged fifty. Chronic middle-ear suppuration (R.) with sigmoid sinus and internal jugular vein thrombosis; death. The history revealed the fact that vomiting, rigors and sweating had occurred at intervals for a fortnight. Immediately after admission the temperature rose to 105.6° F.; there was a severe rigor and the temperature fell in a few hours to normal. The radical mastoid operation was performed and a dirty brown, soft sinus wall was exposed. The vessel contained a thin fetid fluid and behind the knee a septic clot which was removed. The internal jugular vein contained pus. It was ligatured just above the sterno-clavicular joint, at which point a healthy-looking clot was exposed. The pus in the mastoid, sigmoid sinus and vein contained an undescribed *Gram-positive diplococcus* and the *Bacillus coli*. Blood taken from the lobule of the ear gave a growth of a similar *Gram-positive diplococcus* and an abundant growth of *Streptococcus pyogenes*.

The temperature remained normal for three days after the operation and though it then rose and was somewhat irregular for the next three days, there was no further rigor until the sixth day after the operation. Anti-streptococcal serum was then administered, and during the following seven days five doses of 10 c.c. were given. During the same period four rigors occurred, two of them being very severe with the temperature reaching 106° F. No improvement took place and the patient died on the seventh day. The post-mortem revealed a septic thrombus in the right innominate vein and some minute abscesses in the lungs.

Remarks.—Of the five cases recorded above, three, with chronic middle-ear suppuration, had meningitis, two evidently of a purulent

character and one of a less severe type; in two of them there was associated labyrinth disease. The fourth case was one of serous meningitis complicating acute middle-ear suppuration and presenting symptoms of acute serous labyrinthitis. The fifth case had septic thrombosis of the sigmoid sinus and internal jugular vein as a complication of chronic middle-ear suppuration. In three of the cases of meningitis and in the case of sinus thrombosis the *Streptococcus pyogenes* was the predominant organism. In the remaining case of meningitis the *Bacillus aerogenes capsulatus* was probably the active organism. In all of them a polyvalent anti-streptococcic serum was used. It was employed in the case of meningitis, in which the *Bacillus aerogenes capsulatus* was eventually recognised because the micro-organisms seen in films might have been streptococci, and it was deemed advisable not to postpone the introduction of the serum until their exact nature was established.

The cases may be divided clinically into two groups, each group in itself possessing certain common features. Thus, in the first, we have three (Cases 1, 2, 3) which terminated in recovery, namely, a purulent meningitis, meningitis of a less severe type, and a serous meningitis. They came under treatment at a comparatively early period in the history of the complication, the first two at the end of a week, the third within twenty-four hours of the onset of the acute symptoms. In two the temperature on admission was 100° F., in one 99° F. In all the pulse was good. The peripheral focus of infection was at once removed, lumbar puncture was performed, and within forty-eight, twenty-four, and twelve hours respectively after the operation anti-streptococcic serum was injected; the injections were repeated at short intervals, sometimes into the spinal canal, sometimes subcutaneously.

In the second group we have two cases (4 and 5), one with purulent meningitis and the other with sigmoid sinus thrombosis and extensive involvement of the internal jugular vein. Both terminated fatally. They came under treatment at some considerable time after the onset of the acute symptoms, the first nearly three weeks, the second after the interval of a fortnight. In the first the temperature on admission was 102° F., the pulse 121. In the second a severe rigor, with the temperature 105.6° F., occurred immediately after admission. Both patients were obviously ill in contra-distinction to those in the first group. Immediate operation was performed in each case, and a careful attempt made to remove all the focal sepsis. In the first case lumbar puncture was carried out and anti-streptococcic serum was used at

once, but in the second the employment of the serum was delayed until the sixth day after the operation. The *post-mortem* in each case revealed the extensive nature of the septic infection.

It is obvious from a study of the two cases (4 and 5) that the disease had progressed too far to admit of a successful result from surgical interference alone. The case of meningitis died on the third day after admission with extensive purulent basal meningitis spreading along the spinal meninges. In the case of sinus thrombosis it was probable, from the *post-mortem* appearances, that the disease had already reached the innominate vein at the time of operation, though the appearance of the clot at the lower end of the internal jugular suggested that an aseptic thrombus had been reached at the site of the ligature. The serum proved ineffectual in counteracting the virulence of the infection. It is possible that if the serum had been commenced immediately after the operation in Case 5, instead of being delayed for six days, a more satisfactory result might have been obtained.

A study of the first group (Cases 1, 2, 3) raises the question as to whether the serum played any part in bringing about the successful results. On the other hand, how far was recovery due to the fact that these cases came under surgical treatment at an early period in the history of the illness and whether operation was not entirely responsible for the cure. It is, of course, difficult when dealing with such a small number of cases to draw reliable deductions. In Case 1 no organisms were found in the specimen of cerebro-spinal fluid withdrawn on the day of admission. Four days after the operation, in spite of a subcutaneous injection of anti-streptococcic serum, the temperature remained practically unaffected, and a second specimen of the fluid contained pus and organisms similar to those already found in the mastoid cells. After a second dose of serum, however, administered subcutaneously, and a third injected into the spinal canal after withdrawal of fluid, the fourth specimen of cerebro-spinal fluid showed a marked improvement and no organisms were grown from it. Four further doses of serum were given, and though the patient's general condition varied from day to day, he slowly recovered. In Case 2 the infection must be regarded as a mild one. The organisms found in the cerebro-spinal fluid were probably dead as they were only seen in films, no growth being obtained. This occurred before any serum had been used. In Case 3 the very early operation with removal of the primary focus probably sufficed in itself to bring about a cure.

We are of the opinion that Case 1 alone furnishes any positive evidence of the efficacy of the serum therapy as an adjunct to operation. In Cases 4 and 5, in which some additional agent was most desired, the serum failed to benefit the patients. In the cases just recorded the anti-streptococcic serum was employed on the supposition that the *Streptococcus pyogenes* was the virulent organism. While undoubtedly this was the predominant organism present in four of the cases, it was not the only one recognised. When using serum care should be taken not to overlook the importance of the part which all the organisms present may play in the propagation of the infection.

VACCINE THERAPY.

The treatment of the following four cases was assisted by the administration of autogenous vaccines. Two were cases of sigmoid sinus thrombosis, and in two there was sinus thrombosis associated with meningitis. Three recovered and one died:

CASE 6.—T. M.—, aged twenty. Chronic middle-ear suppuration (L.), with septic thrombosis of the sigmoid sinus; recovery. Symptoms of acute illness commenced six days before his admission; fever, headache and vomiting. The patient at first denied having had any rigors until again questioned after his operation, when he admitted their occurrence.

September 10.—The radical mastoid operation was performed; a very fetid peri-sinus abscess was opened. Dark coloured, foul-smelling fluid escaped through a small opening in the sinus. The sinus was freely incised and the broken-down clot evacuated. The internal jugular vein was not ligatured, as a healthy-looking clot was exposed at the lower end of the sinus and no history of rigors had been obtained. The *Bacillus proteus vulgaris* and *Staphylococcus aureus* were obtained from the pus in the mastoid and in the sinus. No organisms were found in the blood taken from a vein at the bend of the elbow. Five days later he had a rigor and two days later he had a second and a third rigor. September 18: The sinus was re-investigated: pus was found in the sinus behind the gauze plug; the bulb was exposed and the vein ligatured. The temperature fell to normal. September 20: A *Proteus* vaccine was commenced; dose 200 millions. Five injections were given on five consecutive days. With the exception of a rise of temperature to 102° F. on the evening of the day on which the first vaccine was given the temperature remained normal. A slight rise, however, to 99.8° F. occurred on September 25. The patient felt better. He had a slight cough and a few crepitations could be heard over the left lung. From September 26 to 30 the temperature varied slightly from 97° to 99°. September 30: Temperature rose to 101.8° F. and on October 1 to 103.4° F., but no rigor occurred. A daily vaccine of *Bacillus proteus vulgaris* was again started, the temperature during the following eight days varying from 99° to 103°, but always with a downward tendency until October 9, when it reached the normal. The vaccines were then stopped. On October 13 there was again a rise to 101°. Five further injections of the vaccine were made. From this time the patient made an uninterrupted recovery.

CASE 7.—Mrs. D—, aged forty-one. Chronic middle-ear suppuration (L.), with septic thrombosis of the jugular bulb and vein; recovery. The patient had been treated for a fortnight for influenza and during that time she had had more than one rigor. She was admitted on March 11 and operated upon by Dr. J. S. Fraser. The internal jugular vein, which contained pus, was ligatured above the sterno-clavicular joint and dissected out. The radical mastoid operation was performed. The sigmoid sinus was healthy. The pus from the vein contained the *Bacillus coli* and a few short *Gram-positive bacilli*. The temperature on admission was 99° F.; on the following day after operation 100.2. During the next four days there were no rigors; the temperature varied from normal to 99° and 100° and the pulse from 100 to 121. No organisms were grown from the blood taken from a vein about the elbow. The wounds showed a healthy reaction. The patient's general condition, however, was poor. March 17: Temperature rose to 101, 101.8° and to 102.4° F. On the 18th *Bacillus coli vaccine* (one dose, 40 millions) was administered. Between this date and March 23 the temperature swung from normal and 99° to 102° and 102.6. March 23: A second dose of the vaccine was given. With the exception of a rise of temperature the same evening no further exacerbation took place and the patient rapidly recovered.

CASE 8.—L. M'D —, aged thirty-one. Chronic middle-ear suppuration (R.), with labyrinth suppuration; sigmoid sinus thrombosis with symptoms and signs of meningitis; recovery. Patient had had severe pain in her right ear for one week and had vomited on the day before admission. She looked ill and suffered from very severe headache. Temperature 101.4° F., pulse 116. There was entire absence of cochlear and vestibular responses in the right ear. Shortly after admission, December 16, she had a rigor. Complete mastoid operation, vestibulotomy and drainage of the meninges through the labyrinth. The sinus wall exposed and found of normal appearance. Lumbar puncture: Cerebro-spinal fluid under great tension but not turbid; no deposit; cultures of *Streptococcus pyogenes* and *Staphylococcus aureus* were obtained from the fluid. The pus from the mastoid showed *Streptococcus pyogenes* and *Bacillus proteus vulgaris*. There were no clinical signs of meningitis at this date. During the next three days she had three rigors, consequently on December 19 the sinus was explored. From its lower part a thin, foul secretion was evacuated; the internal jugular vein was ligatured and the bulb washed through. The secretion contained the *Bacillus proteus vulgaris*. The temperature was normal for two days and then commenced to rise. December 22: Temperature 100.2, pulse 120. Vaccines commenced: 50 millions of *Streptococcus pyogenes*; 100 millions of *Bacillus proteus vulgaris*. These were given each day for the next nine days. During this period the temperature varied from normal to 100° and 102°. January 1: Vaccines discontinued. The patient's general condition much improved; appetite better; in very good spirits and anxious to get up. The temperature still remained irregular, but with the exception of a more marked rise on two occasions was generally lower. January 11: Temperature remained normal; cerebro-spinal fluid ceased to flow through the labyrinth. January 15 and 16: Meningeal symptoms showed themselves; headache; double Kernig; rising temperature; cerebro-spinal fluid turbid and under tension; *Staphylococcus aureus* and *Gram-negative bacilli* obtained in cultures. January 16-26: Temperature varied from 99°-101.6° F. January 26: Vaccine of the *Staphylococcus aureus* commenced and given each day for six days. January 29: Temperature 102.2° F. Another lumbar puncture made; cerebro-spinal fluid still turbid and under increased pressure. February 1: Temperature 98.4° F.; no further rise: the same vaccine continued every other day until February 6. February 9: Lumbar puncture; cerebro-spinal fluid clear; no tension; sterile. Patient later discharged cured.

CASE 9.—J. W.—, adult male. Chronic middle-ear suppuration (L.), with sigmoid sinus thrombosis and meningitis; death. The patient had symptoms of acute illness for twelve days before his admission, fever and sweating and one rigor. February 15: On admission temperature 100° F., pulse 66. Leucocytosis 6300, polymorphonuclears 83 per cent. No meningitic phenomena. Cerebro-spinal fluid under considerable tension, clear; no cells; does not reduce Fehling; sterile. Complete mastoid operation and sinus exposed; no peri-sinus abscess; bone healthy, and sinus wall of normal appearance. Blood from vein in forearm sterile. The temperature continued to be irregular, and though there were no rigors, the patient perspired a good deal. February 22: On account of the sweating the sigmoid sinus was now opened and the internal jugular vein ligatured; a breaking-down clot was found in the sinus. The *Streptococcus pyogenes* was obtained from the sinus, and the same organism was now obtained from a vein in the arm. February 24: *Streptococcal vaccines* commenced, dose 10 millions. Eight vaccine injections made, one every other day. During this period to March 12 temperature varied from 99°–102°. The patient's general condition was very good—he slept and ate well, and put on a little flesh, and his wounds showed healthy reaction. At the same time he occasionally perspired. March 13: Temperature 104° F., headache, vomiting, double Kernig, turbid cerebro-spinal fluid; no organisms. March 16: Delirious. *Streptococcus pyogenes* obtained on culture from the cerebro-spinal fluid. Death on March 20. The *post-mortem* showed an extensive basal meningitis.

Remarks.—Four cases are included in this group (6, 7, 8, 9). All had chronic middle-ear suppuration, and in all there was septic thrombosis of the sigmoid sinus or internal jugular vein, and in two (8 and 9) there was associated meningitis. The first three cases recovered; the fourth proved fatal from meningitis. The organisms found in the infected sinuses were as follows: *Bacillus proteus vulgaris* and *Staphylococcus aureus* (Case 6); *Bacillus coli* (Case 7); *Streptococcus pyogenes*, *Bacillus proteus vulgaris*, and *Staphylococcus aureus* (Case 8); *Streptococcus pyogenes* (Case 9). In Cases 8 and 9, in which meningitis was also present, similar organisms were found in the cerebro-spinal fluid with the exception of the *Bacillus proteus* (Case 8). Operation was performed in every instance, and autogenous vaccines were employed.

If we analyse the fatal case (9) we find that acute symptoms developed twelve days before admission. Owing to the healthy appearance of the wall the sinus was not opened at this date. It was demonstrated on the following day by the negative bacteriological report that there was no infection of the general circulation. On account of irregularity of temperature and sweating, however, the operation on the sinus was performed seven days later, and a streptococcal vaccine was commenced. Eight injections in all were given, one every alternate day. Although the patient's general

condition improved and the wounds showed a healthy reaction, the vaccines failed to prevent the development of a rapidly fatal streptococcal meningitis, which developed seventeen days after the commencement of the vaccines. If the operation upon the sinus had been carried out earlier it is possible that the patient might have responded more satisfactorily to the vaccine therapy.

Cases 6, 7, and 8 came under treatment six, fourteen, and seven days respectively after the onset of acute symptoms. In Case 6 five injections of a vaccine of *Bacillus proteus vulgaris* were given on consecutive days after the second operation on the sinus and vein. The injections were then stopped as the patient felt better, and the temperature did not rise above 99° F. Five days later, however, there was an exacerbation, the temperature going up to 101.8 and 103.4. The vaccines were re-commenced and given daily for nine days, the temperature gradually falling to normal. Four days later a second exacerbation took place, the temperature rising to 101. Five further injections were therefore given, and the patient slowly recovered without another relapse. In this case, I think, we are entitled to assume that the vaccines were of value. After each series of injections distinct improvement took place. In all probability if the first series of injections had been continued over a longer period the relapses would not have occurred.

In Case 7, notwithstanding the delay in the admission of the patient, recovery followed the removal of the infected area. In this case, however, no general blood infection had occurred. Two injections of *Bacillus coli* vaccine were given, but it is difficult to estimate their influence on the progress of the case. The wounds were showing a healthy reaction, and the patient, though feeble, was improving before the first injection was administered; the temperature, however, was distinctly irregular.

In Case 8, operated upon seven days after the onset of symptoms, the illness was very prolonged. In addition to the operation upon the sinus, the cerebro-spinal fluid was constantly draining for a period of three weeks. During this time nine injections of a mixed vaccine of *Streptococcus pyogenes* and *Bacillus proteus vulgaris* were given on successive days. The patient's condition improved in a marked way. Shortly after the cessation of the flow of cerebro-spinal fluid meningeal symptoms showed themselves. The cerebro-spinal fluid no longer contained the *Streptococcus pyogenes*, however, but the *Staphylococcus aureus* and some Gram-negative bacilli were grown from it. A staphylococcal

vaccine was, therefore, commenced, nine injections being given—six on successive days, the remaining three on alternate days. Gradual improvement and recovery took place. It is difficult in this case to apportion the relative therapeutic value of drainage of the meninges and vaccine administration. With the cessation of the drainage and stoppage of the vaccines symptoms again showed themselves. Although recovery supervened upon the second series of injections, lumbar puncture was twice carried out.

Here, also, as in the cases treated with serum, the numbers are so few that it is difficult to estimate the exact effect of vaccine therapy in this class of case. For the same reason it is not possible to draw any deductions as to the relative value of serum and vaccine. While we have laid stress upon the necessity of early operation in meningitis and sinus thrombosis, we can recall more than one case in which prompt interference failed to effect a cure. On the other hand, delayed operation, of which Case 7 is an example, may be followed by recovery. The virulence of the infection is a factor of such supreme importance that the result in any given case must, to a large extent, depend upon this element. Nor, indeed, can the body-cell resistance be overlooked. When we take a comprehensive view of the nine cases which form the text of this paper, and when we note that six of these terminated in recovery, we are, I think, justified in concluding that sera and vaccines have played some part in bringing about these results. In every case of otitic intra-cranial complication there should be no hesitation in employing one or other, as the case may be, in association with the recognised lines of surgical procedure.

I wish, in conclusion, to acknowledge my indebtedness to Dr. F. Esmond Reynolds and to the Staff of the Pathological Department of the Royal Infirmary for their valuable assistance in the bacteriological work and in the preparation of the vaccines.

**AN EXAMINATION OF ONE THOUSAND AND FIFTY SKULLS.
SOME POINTS OF INTEREST IN CONNECTION WITH THE
SURGERY OF THE EAR AND NOSE.**

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EAR.

The Jugular Foramen.—In reference to the question of tying the internal jugular in thrombosis of the lateral sinus, it has been sometimes urged by opponents of this procedure that the vein on the other side may be so small as to be incapable of bearing the extra work put upon it. It is probably very doubtful, bearing in mind the pretty free communications between the intra-cranial sinuses and the veins on the outside of the skull, whether this point is of great practical importance. However, it is of interest to consider the variation in the size of the jugular foramina. Uniformity in size of the two foramina is the exception, but in the great majority the difference is not very great, the left ruling the smaller. In a certain proportion, however, there is decided disparity in size.

In 27 skulls the left was much smaller than the right in 21, very much smaller in 5, and almost obliterated in 1. In 18 skulls the right was much smaller than the left in 13, very much smaller in 4, and almost obliterated in 1. In 2 skulls both foramina were much below the usual size.

In a large number of the skulls the mastoid foramen was present on both sides, but its presence or absence or its size seems to have no relation to the size of the jugular foramen.

Bulging of the Jugular Fossa into the Tympanic Cavity.—Ordinarily the jugular fossa is situated behind and below the tympanic cavity and is separated from it by fairly thick bone. Bulging of the fossa into the tympanum has been observed clinically, and rare instances have been described where the bony vault of the fossa has been absent and the jugular bulb itself has appeared in the tympanum, giving a blue appearance to the tympanic membrane. The importance of this departure from normal in reference to the surgery of the middle ear is obvious. This abnormality does not appear to have been described by anatomists so far as I have been able to make out.

In five instances it was present on the left side and in eleven on the right. Of these it was bilateral in two skulls, in one being so marked on either side that in life it must have quite hidden the

foramen rotundum. In another skull a bulging of the fossa to a similar extent was present on the right side. In one skull, in addition to this condition of the jugular fossa, the carotid canal was separated only by exceedingly thin bone from the anterior part of the tympanum. In these sixteen instances of abnormally high jugular fossæ the bone separating the fossa from the tympanic cavity was very thin, in some exceedingly so. In four there was a communication between the two, and in one of these, from the smooth appearance of the edges it is probable that this existed during life. In these skulls the fossa also bulged into the labyrinth, especially in the posterior part, and indeed in some other skulls where the bulging was not sufficient to cause a vaulting of the floor of the tympanum it nevertheless made itself evident in the labyrinth, and the bone separating the labyrinth from the bulb was as thin as possible. The interest of this lies in the danger of wounding the jugular bulb in operations on the labyrinth. It is interesting to note the greater frequency of this anatomical condition on the right than on the left side.

The Posterior Part of the Glenoid Fossa is separated from the external meatus by the firm tympanic plate as a very general rule. In only one instance was this plate found so thin as to be in part lacking. This was observed in one skull on both sides.

The following *irregularities* were also found: In one skull on both sides the oval windows were occluded by bone, while in another there was bony obliteration of both the oval and round windows on the left side. Except for these two skulls the foot-plate of the stapes was not found fixed in the oval window in any instance.

In the skull of an Australian aborigine there was very marked development of the eminence around the foramina rotunda, and one wonders if this would be associated in life with particularly acute hearing, such as the more primitive races, the North American Indians, for instance, are credited with.

In one skull there was such thickening of the external meatus on both sides that in life the channels must have been quite impervious.

In one skull there is a large perforation below the mastoid process, pointing to a probable Bezold's abscess in life.

Nose.

Deflection of the Septum.—Although it is unusual to find a straight septum, it is only in a certain proportion that the deflection

is so marked as to cause decided interference with the patency of one or other, or, it may be, of both nostrils, and it is only these I have considered as instances of deflected septum. In these skulls I had, of course, to deal only with the bony septum. No doubt the proportion would be much increased if the cartilaginous septum could also be considered. Moreover, by the addition of the cartilage a simple deflection would in many cases be converted into an S-shaped one.

In forty-five skulls the deflection was to the right side and in thirty-six to the left. Or in other words, in eighty-one skulls there was deflection of the bony septum to one or other side of sufficient degree to make it probable that in life there was more or less severe interference with respiration through one or other nostril. There is, it will be observed, a preponderance, though not a great one, of right-sided deflections. As to the cause of deflections, I imagine the pocket-handkerchief theory would only be invoked in reference to deflections of the cartilaginous portion. At any rate the majority of these skulls date from a period of a hundred or more years ago, and probably never knew the luxury of a pocket-handkerchief. Moreover, I do not find any uniformity among respectable members of society as regards the hand used in this hygienic procedure. It is difficult to say what actually determines the departure of the septum from the centre, but when once it has departed from the "true" its growth from above downwards and from below upwards will tend to perpetuate and accentuate the deflection.

Bone Cysts.—The development of the ethmoidal cells varies considerably, but uniform enlargement of these cells is not considered among bone cysts. In nineteen instances there was cystic enlargement of the right middle turbinate and in seventeen of the left, and in several of these the enlargement was very marked. In one skull this condition was present on both sides. In three skulls there was marked enlargement of the right bulla ethmoidalis, and in two of the left. In two skulls there was a cyst of the right posterior ethmoidal cell and in one of the left. In one skull there was a large cystic development below the right frontal sinus. It was found to be in connection with the fronto-ethmoidal cell, and not with the sinus. A dentigerous cyst was present in two skulls on the external antral wall.

In one skull there was a large cystic development of the anterior part of the left inferior turbinal.

A few of the skulls examined came from tropical and sub-

tropical places. In these there seemed to be a cellular thickening of the inferior turbinals, especially in the middle third, the part largest as a rule.

I have previously¹ reported on variations in the sphenoidal sinus as seen from the examination of a number of skulls, but in four of these 1050 there was found a remarkable extension outwards of this cavity, in all on the left side. The sinus extended completely to the outer part of the root of the external pterygoid process. One recognises the difficulty there would be in dealing with such a cavity surgically if the need arose, as much of it could not be inspected through the nose. The relation of the Vidian nerve to these large spaces is interesting, lying as it does just beneath the floor, in two to a large extent uncovered by bone. It is easy to understand how a catarrhal or inflammatory condition in such a sinus could give rise to pain in the ear, bearing in mind the association of this nerve with the tympanic plexus through the great superficial petrosal. In this connection it may be remarked that the recess in which Meckel's ganglion resides, the sphenopalatine fossa, was in many of these skulls converted into a cell in close communication with the posterior ethmoidal cell. Indeed, it seems in a few skulls as if the ganglion must have been actually located in this cell. We may have here an explanation of the pain in the throat complained of sometimes in ethmoidal disease.

While dealing with the question of neuritis resulting from sinus disease, it may be observed that in a certain proportion of the skulls the supra-orbital and supra-trochlear foramina were found to be in reality canals of some length. A congestion of the sheath of one of these nerves secondary to frontal sinus disease would, it is possible, be more likely to lead to pressure on the nerve and consequent pain than where a foramen only, or, as in many instances, not even that, exists. In one or two skulls fairly large canals were found leading into the frontal sinus—a point of importance in reference to the œdema which is sometimes found associated with frontal sinus catarrh and suppuration.

Second Opening into Maxillary Antrum.—It is probably not very rare to find a second antral opening in the middle meatus behind the usual one. In the fresh state the large opening in the maxilla leading from the middle meatus is to a great extent curtailed posteriorly by a fold of mucous membrane in which the accessory opening has been found. There is very little bone posterior to the opening to permit of a second opening in that part. It has been

¹ JOURN. OF LARYNGOL., RHINOL., AND OTOL., February, 1910.

held that it is through these accessory ostia that an antral polypus extends to form what is known as a choanal polypus. This may be the explanation in some cases, but from an examination of these skulls it seems possible that the explanation should be looked for in the wall of the inferior meatus. The fact that it is nearer the floor of the sinns would make this more probable. In four of these skulls there was an opening in the inferior meatal wall, in two instances on the left and in two on the right side. This opening had all the appearance of having been present during life, the borders being smooth. It was situated about the junction of the middle and posterior thirds, was of the size of a split-pea, and was evidently continuous with the large opening into the antrum above the inferior turbinate, the articulation of the turbinate bone with the nasal wall of the maxilla not having been sufficient to obliterate this downward extension. In two other skulls in which openings exist in the same place the appearances do not warrant one in looking upon them as having been present during life.

One skull showed a twist of the upper jaw from inequality of the two superior maxillæ, the right being much the larger.

In two skulls there was ankylosis of the atlas with the occipital bone.

For the opportunity of examining these skulls I have to express my thanks to Professor Bryce, of Glasgow University, and to Dr. Hutton, Lecturer on Anatomy at Queen Margaret's College, Glasgow.

A METHOD OF DETECTING FIXATION OF THE STAPES.

By F. P. STURM, M.Ch.,
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THE usual tests for stapedio-vestibular ankylosis are so uncertain, and the presence of the condition itself renders the prognosis of any case of deafness so hopeless, that no excuse is needed for describing a method of considerable value for its detection. The test is based upon two facts, namely, (1) the invariable presence of paracusis in otosclerosis, and (2) the inability to raise labyrinthine tension by exerting pressure upon a stapes which is fixed (Gellé).

Test for Paracusis.—Many patients with undoubted otosclerosis deny that they hear better in a noise, but the presence of paracusis

may nevertheless be demonstrated in the following manner:¹ A watch is held at such a distance from the patient's ear that it just ceases to be heard, and no more. If now the foot-piece of a loudly vibrating fork of low pitch (C 128) is applied over the tympanic antrum of the same side, the patient at first hears nothing but the note of the particular fork, but if paracusis is present the tick of the watch becomes audible for a few seconds as the vibrations of the fork diminish in intensity, to disappear again as the fork becomes inaudible. This test affords very valuable information, but it may be necessary to make several applications of the fork to obtain a positive result.

Negative Pressure Test.—Gellé's test for fixation of the stapes, though theoretically sound, is generally admitted to be of doubtful value in practice. Not only is it difficult to maintain a steady air-pressure of sufficient duration by means of a Politzer bag or other appliance, but the very fact of the meatus being obstructed by the nozzle of such a bag confuses the patient's judgment of his own perceptions, renders it impossible to test air-conduction adequately, and vitiates the results of bone conduction. Moreover, though a positive Gellé (in the absence of labyrinthine fistula) is proof of the mobility of the stapes, a negative result does not make it at all certain that the ossicle is fixed, for such a result may be due to other well-recognised causes, as, for example, adhesions binding down the hammer-bone, or stiffness of the malleo-incudal articulation. Even in normal ears, to a large number of which the writer has applied Gellé's test experimentally, the results obtained are of the most diverse and contradictory character. The following method has been devised for the purpose of eliminating some of these sources of error.

The largest admissible size of catheter having been introduced the tympanum is gently inflated to make sure that the instrument is properly engaged, and a few minims of 10 per cent. cocaine in adrenalin are injected in order to render the Eustachian tube as patent as possible. A valveless rubber bag (or a rarefacteur), half emptied of air, is plugged on to the Eustachian catheter, and the mobility of the drum verified by actual inspection as the bag is alternately compressed and relaxed. A vibrating fork of

¹ By this test paracusis may be demonstrated in the earliest stages of oto-sclerosis. If it is absent the condition is most probably chronic adhesive catarrh of the middle ear, in which paracusis is a later symptom. In a paper which will shortly appear I have shown that paracusis is no more than a compensatory exaggeration of a normal physiological reflex, which may be demonstrated in every healthy ear.

medium pitch is now applied to the bone over the tympanic antrum and the rubber bag allowed to expand to its full extent. If the consequent rarefaction within the tympanum causes—(1) the sound to appear less to the patient it means that the indrawn hammer-bone has driven the foot-plate of a movable stapes into the oval window and so raised the labyrinthine pressure. (2) If the sound appears louder it means that the malleus is ankylosed or stiffened and therefore unable to exert any inward pressure upon the stapes, which is consequently drawn out of the fenestra, diminishing the tension in the labyrinth, and resulting in a temporarily increased acuity of hearing. (3) If the sound remains unaffected, or so slightly affected that the change is barely perceptible, we may safely assume that there is fixation of the stapes. (In patients with *greatly* increased bone-conduction slight changes in the intensity of the fork may be perceived even with a rigidly ankylosed stapes because of variations in pressure transmitted to the perilymph across the membrana secundaria of the round window. If there is any suspicion of this error it may be corrected by air-conduction, which is always sufficiently diminished to render *slight* changes of tension inoperable.)

If transaural auscultation is practised during the test the observer will notice a diminution in the sound of the fork as the tympanic membrane of the patient becomes tense. If the sound appears louder to the patient but not to the observer, the stapes is not fixed but the drum-head is sclerosed or retracted (chronic middle-ear catarrh). If it appears less to the observer but unchanged to the patient there is a mobile membrane and a fixed stapes (otosclerosis). If it is unchanged both to the observer and the patient both the drum-head and the stapes are fixed (otosclerosis complicated by inflammatory adhesions, or fibrous fixation of all structures from chronic middle-ear disease).¹

It is not claimed that this method is anything more than a useful modification of already existing tests which possesses certain definite advantages of its own. (1) Movements of the ossicles may be induced without obstruction of the external meatus. (2) It is thus possible to test both air- and bone-conduction, and to compare

¹ In the absence of confirmatory signs of otosclerosis it is not safe to assume that fixation of the stapes is necessarily due to bony ankylosis between the foot-plate and the fenestra. Fibrous fixation may be a sequel of chronic non-suppurative disease, in which case the prognosis, though grave, is not so hopeless as in the bony variety. Or the stapes may be fixed by post-suppurative adhesions between the crura and the pelvis of the promontory, in which condition the prognosis is hopeful, since good results may follow operative mobilisation.

one with the other, under varying conditions of tympanic and labyrinthine pressure. This is impossible, or at any rate the results are vitiated, if the external meatus is occluded as in Gellé's test. (3) The test for paracusis is a delicate one, of especial value in those very early cases in which the patient is as yet unaware that he is a paracusic. (4) The test as a whole affords a valuable confirmatory method of diagnosis between otosclerosis and the conditions which simulate otosclerosis. If it gives affirmative results together with Bezold's "triad of symptoms," normal otoscopic image, insensitive drum-head, and patent Eustachian tubes, the diagnosis of bony fixation of the stapes may be made with certainty.

PROCEEDINGS OF THE ROYAL SOCIETY OF MEDICINE—LARYNGOLOGICAL SECTION.

March 1, 1912.

DR. STCLAIR THOMSON, *President of the Section, in the Chair.*

Abridged Report.

Specimen of Larynx showing Epithelioma.—StClair Thomson, M.D.—This patient, a man, aged twenty-three, was shown before the Society in April, 1911,¹ when several members were loth to accept the diagnosis on account of the atypical clinical symptoms. The patient was shown again in November, 1911, when the diagnosis was no longer doubtful. This specimen shows how the disease has consumed all the thyroid cartilage, of which no part exfoliated. It was in this way that the early symptoms—which followed a laryngo-fissure for an apparently simple neoplasm—simulated septic perichondritis.

Combined Tuberculosis and Syphilis of the Larynx.—StClair Thomson, M.D.—The patient, a woman, aged forty-three, has no physical signs in the chest, but the Wassermann is positive, and tubercle bacilli have been found in her sputum. The larynx shows the deposits of tubercle and syphilis each in a typical form. The interarytenoid space is infiltrated, and both cords infiltrated and abraded, and there are "mouse-nibbled" ulcers on both ventricular bands. The epiglottis is swollen with deposit, and there is a punched-out ulcer in front of each arytenoid.

Double Abductor Paralysis.—StClair Thomson, M.D.—Two years ago the patient, a man, aged forty-two, had tracheotomy performed for diphtheria, and wore a tube for eight months; but his voice and breathing were satisfactory until February 10 last. He was then seized

¹ JOURN. OF LARYNGOL., RHINOL., AND OTOL., vol. xxvi, p. 310.

with sudden dyspnoea and suffocative attacks. The voice is high-pitched, cracked, and stridulous. There is stridor and dyspnoea even at rest. The glottis is reduced to a chink, and only opens in the posterior half. This is due to double abductor paralysis. The left cord is fixed in the adducted position. The right cord is almost completely stationary in the same position, but there is slight movement. The pupils and pulses are equal. There is increased dullness behind and to the left side of the sternum, and a skiagram indicates a mediastinal tumour. Bilateral laryngeal palsy is a rare condition. In 150 cases of abductor paralysis Avellis found that it was bilateral in only twelve.

Double Abductor Paralysis; Proposed Operation.—H. J. Davis, M.B.—The patient, a man, aged fifty, had syphilis in 1889; in 1894 tracheotomy was performed for an "attack of suffocation." The left arytenoid is fixed, the right hardly moves; the same applies to the vocal cords, which are in the position seen in double abductor paralysis; the larynx otherwise is normal. The patient cannot work "as he cannot breathe." There is no lesion apparent in the chest. The exhibitor proposes to perform thyrotomy and remove the left arytenoid and corl completely, so as to procure an airway similar to Professor Hobday's ventricle-stripping operation in horses.

The PRESIDENT (Dr. STCLAIR THOMSON), referring to his own case, said that since the notes were sent in the man was admitted to a general ward, but he kept the ward occupants awake by the stridorous noise he emitted. It was a question whether the noise was due to double abductor paralysis or to lower tracheal stenosis.

Dr. DE HAVILLAND HALL said that in the President's case there was difficulty in deciding whether there was single or double stenosis of the air-passages. Early in his (the speaker's) career he was called to see a case under the care of Sir Andrew Clark with reference to tracheotomy. There was bilateral abductor paralysis, but also signs of intra-thoracic aneurysm. He concluded the patient had double stenosis of the air-passages, and that tracheotomy would be of no use. The patient died a few hours later. At the autopsy double stenosis of the air-passages was found. As regards diagnosis, the respiratory excursions of the larynx were of importance. If the obstruction was at the larynx there were usually considerable respiratory excursions of the larynx, whereas if it was due to direct pressure on the trachea the excursions were absent.

Mr. HERBERT TILLEY mentioned the case of a man who was dying with aneurysm of the aorta, which was pressing on his left bronchus so that it had almost occluded it. He was in great distress with his breathing, and did not seem likely to live forty-eight hours. Tracheotomy was performed, and a König's spiral tube was passed into the tracheal wound and beyond the obstruction. Great relief was experienced, and the patient lived a fortnight without any distress.

Sir FELIX SEMON said that thirty years ago he recorded a case of double stenosis of air-passages in the *Transactions of the Pathological Society of London*, in which tracheotomy failed to relieve the patient. In cases in which there was reason to fear a second stenosis further down he suggested that the surgeon should be armed with a long flexible tube, so as to pass it, if possible, below the second stenosis. He had great misgivings about the proposal of Dr. Davis to cut out one vocal cord and one arytenoid cartilage. One knew from the experiences made in laryngeal cancer that a cicatricial band was likely to form in the situation of the removed corl. And in the event that no such band should form the

patient would ever afterwards have to go without his voice, and speech would be reduced to a whisper.

Mr. MARK HOVELL concurred with Sir Felix Semon's remark in regard to Dr. Davis's case. The man now had such a good voice that it would be a pity to do an operation which would deprive him of it. It would be better to do tracheotomy.

Dr. WALKER DOWNIE said that some years ago he had a man with a similar condition, who kept awake all the patients in the ward. The patient refused tracheotomy, and nothing could be seen with the tracheoscope. The insertion of an intubation tube overcame the noise, which was due to double abductor paralysis.

Mr. ARTHUR EVANS agreed with Dr. Davis that if his patient was so handicapped by difficult breathing that he could not work, it was reasonable to remove part of the obstruction by removing one of the vocal cords; if that operation should fail, he considered that then would be the time to do a tracheotomy. Mr. Evans said that he himself was showing a case in which, following an operation for removal of a tumour in the isthmus of the thyroid gland, there was paralysis of the right vocal cord. The patient's breathing was so distressful that the thought of losing her voice was as nothing compared to the terror through which she passed during an attack of dyspnoea. It was Mr. Evans's intention to try and find the cut ends of the recurrent laryngeal nerve and suture them; if the proximal end could not be found, then to make the anastomosis with a branch of the hypoglossal loop. If this should prove impracticable, it was his intention to remove the right vocal cord.

Dr. PERMEWAN agreed with Sir Felix Semon, especially in the case of a man earning his living by manual labour. In reference to the President's case, he was not impressed by the argument that when such obvious obstruction was met with in the larynx one should refrain from doing tracheotomy because there might be obstruction somewhere else. The obstruction should be removed from where it was known to exist.

Dr. PATERSON remarked that Dr. Davis's patient had had syphilis, and in syphilitic cicatrices there was danger of the condition breaking down again and leading to much greater stenosis afterwards. He counselled leaving it alone.

Dr. DAN MCKENZIE said the suggestion of removing *both* cords for abductor paralysis had already been carried out, and the chance of sufficient airway being left would be greater then, even if cicatricial tissue did form.

Dr. DAVIS, in reply, said the man could not have less room to breathe than he had at present, and he did not see why the cord should not be removed. The passage could be dilated periodically.

The PRESIDENT replied that he had hoped some suggestions would have been made for treatment of the mediastinal tumour. He had heard of such conditions having disappeared after treatment with X rays and radium.

Foreign Body retained in the Nose for Fourteen Years; a Grain of Indian Corn, which is Germinating.—H. J. Davis, M.B.

—This was expelled from the left nostril of a girl, aged nineteen, six weeks ago. She had had rhinorrhoea ever since she was aged five. Originally she had been taken to the casualty department, as she had pushed a piece of maize up her nose. Attempts had been made to extract the foreign body without avail. The exhibitor at first mistook the case for a sinusitis. After using drops of H_2O_2 she had violent

sneezing, and in blowing her nose the foreign body was expelled. It is germinating. The girl is now quite well.

Foreign Body, a Pearl Collar-stud, impacted in the Glottis of a Child aged three.—H. J. Davis, M.B.—Last December the child was brought to hospital livid and suffocating. Tracheotomy was performed at once; the child died later. The stud is resting head downwards, the edges of the base lying on the cords and thereby occluding the glottis.

Dr. PATERSON had recorded a case in which a metal collar-stud was lodged in the larynx of an infant, aged nine months, and remained there for three months. It lay across the larynx, and thus preserved a good airway: it was only when the breathing became difficult, owing to œdema, that the case attracted notice.



Collar-stud impacted in the glottis.

Dr. WALKER DOWNIE a few years ago had published a case in which a threepenny-piece was fixed in the same position for one month. The patient was hoarse, and was breathless on exertion. The foreign body had been inhaled while he was intoxicated.

Traumatic Injury to the Larynx.—H. J. Davis, M.B.—The patient, a man, aged forty-one, admitted to the hospital twelve months ago for cut throat. The thyroid cartilage and tracheal rings were divided with a knife and hæmorrhage had been profuse. When seen by the exhibitor the patient was aphonic. The vocal cords were destroyed but were replaced by granulation-tissue, which has since become organised. In July, 1911, the voice returned, and has improved steadily ever since. The white semicircular band seen below the vocal cord is one of the tracheal rings projecting inwards at the seat of injury.

Functional Aphonia in a Child, aged six.—H. J. Davis, M.B.—

When aged two the child had diphtheria and wore a tracheotomy tube for seven weeks, since which time, up to six months ago, she was aphonic and spoke only in a whisper. When first seen the larynx presented the typical appearance of functional aphonia, with bowing of the cords. Faradisation with intra-laryngeal electrode produced immediate return of the voice. The voice sound has since remained good.

Mr. CLAYTON FOX thought the question had to be considered as to whether the condition was not brought about by wearing the tracheotomy tube, or whether the diphtheria did not induce temporary paralysis.

Mr. WESTMACOTT said many so-called functional aphonias in children were really due to a reflex irritation. Aphonia often remained a considerable time after tracheotomy, even when this was done for temporary obstruction.

Mr. CYRIL HORSFORD inclined to functional aphonia, despite the pathological history. The conduction of impulses from the brain might have been in abeyance through the diphtheria, and when the tract had recovered the carrying out of the nerve impulses had been forgotten so that all that had to be done was to revive vocal memory by a stimulus.

Mr. HOVELL asked whether the diphtheria bacillus was still present.

The PRESIDENT had had a case of functional aphonia in a younger child than this, in which diphtheria could not be invoked. The child was holding a piece of chalk in the mouth at school, when suddenly he turned blue in the face and ceased to speak, but could breathe. By the direct method he (Dr. Thomson) saw a bruise on one vocal cord, but could not see the chalk. The child was slightly anæsthetised, but X rays revealed nothing. He was put back to bed, but did not speak for a week. On the next operating day he was again put under chloroform more deeply, and examined. He was encouraged to speak on coming round, and spoke from that time on.

Dr. DAVIS, in reply, said he did not take a swab, as the diphtheria occurred four years ago.

Double Acute Frontal Sinusitis following Influenza.—H. J. Davis, M.B.—

Boy, admitted with swelling of forehead and face. The eyelids were œdematous and the eyes closed. The case was mistaken for facial erysipelas. History of influenza ten days before, with subsequent intense frontal pain, sickness and rigors. First operation: Large abscess in forehead evacuated. The skin undermined up to the hair; in the anterior wall of right frontal sinus was a large hole, and the sinus was full of pus. Left sinus appeared not to be affected as the septum was intact. Second operation: The left sinus had become acutely infected, with recurrence of symptoms. Both sinuses freely laid open and a large hole drilled into each nasal fossa to enlarge the infundibulum. A complete Killian was not done as the "bridges" were destroyed. Left middle turbinal removed; the nose was not plugged; wounds healing rapidly; scars (at present) slight.

The PRESIDENT said these cases were sometimes mistaken for erysipelas and for œdema of the eyes. He agreed that it was not necessary or advisable to do a complete Killian for acute frontal sinusitis.

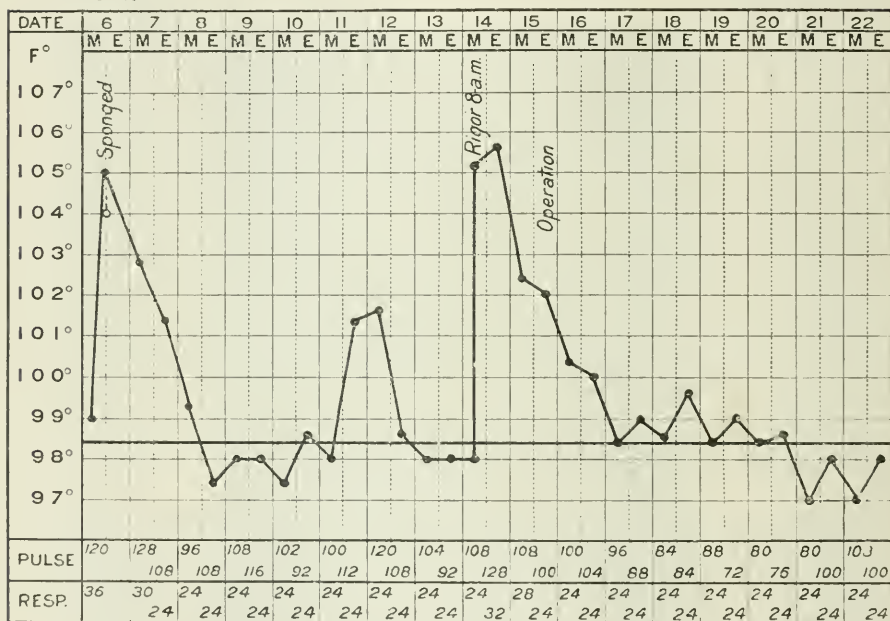
Mr. ROSE noticed that spontaneous perforation of the anterior wall of the frontal sinus occurred. One was commonly led to believe that it was the thin wall of the frontal sinus which gave way when the sinus was full of pus. In several of his own cases he had been struck by the fact that it was the thick wall of the sinus which had given way spontaneously.

Dr. DUNDAS GRANT asked whether this patient was the subject of chronic frontal sinus suppuraton before the attack of influenza.

Mr. HERBERT TILLEY did not think Mr. Rose's experience in this matter was unique. In one of the first cases of acute frontal sinus suppuraton the speaker had seen, the perforation had occurred in the anterior wall.

The PRESIDENT said he had a case in which the perforation was in the anterior wall. The patient was a boy with acute *Micrococcus catarrhalis* infection, which began in the throat and spread up to the nose, and developed a fluctuating swelling under his eye. That had broken through the thickest anterior part. When pus broke through the lower part it was generally derived from the orbito-ethmoidal cell, not the frontal sinus.

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Temperature chart of case of acute sphenoidal and maxillary sinusitis.

Dr. PERMEWAN had opened an abscess in the posterior fossa of the skull forty-eight hours after the onset of influenza; these cases were very rapid in their course.

Dr. DAVIS, in reply, said that the boy was well until he had influenza. He had had to operate the same day on an old-standing case, the patient complaining of intense frontal headache for which there was no obvious reason. He laid open the almost obliterated sinus, and found there was erosion of the posterior wall and an abscess of the frontal lobe. This burst, and he had basic meningitis, to which he succumbed. He thought the pain from which he had suffered for four or five years had been from abscess of the frontal lobe, which might have been there all the time.

Acute Sphenoidal and Maxillary Sinusitis. — H. J. Davis, M.B. —

The patient, a girl, aged twenty-one, had rigors and was extremely ill, with nothing to account for it. She complained of no nasal trouble, but

transillumination showed opacity on the left side. The maxillary ethmoid and sphenoid were opened and drained; they were full of pus. The alteration in the character of the charts after operation is interesting.

The PRESIDENT noted that the patient did not complain of nasal trouble, and one should not refuse a rhinological inspection because there seemed to be no pus. The patient might deny that there was pus, and yet the sinuses might be found occupied. He asked whether the sinuses were opened on both sides, and whether the operations were exploratory, or whether enough pus was found in the nose to locate it to its sources. He presumed the clinical symptoms were rigors and malaise only, and that there were no localising symptoms in the head and eyes.

Dr. DAVIS replied that the woman was very ill, and nothing was seen to account for this. Nothing in the lungs or abdomen could give a clue. She said she had had no discharge or pain. When transilluminated she had a marked shadow, and as the X rays also showed a shadow he opened the antrum and sphenoid and eurented the ethmoid cells. After this the temperature fell, and she was now well.

The PRESIDENT related the case of an officer who for three weeks had had a temperature. A specialist in tropical diseases saw him, as it was thought it must be an Oriental disease, but it was not. The late Sir William Broadbent said he thought it was syphilis, but it was not. The leading chest specialist of that time said that though there were no chest signs, he felt sure it would turn out to be tuberculosis, but it did not. Then a leading fever specialist from London came and said it was fever, but he did not know what kind. Meantime the patient continued smoking cigarettes and walking about. He (Dr. Thomson) finally saw the patient, let out some pus from the ethmoid and sphenoid, and the temperature dropped at once.

Lupus of Hard and Soft Palate, Epiglottitis, Larynx, and both Nasal Cavities; Lupus Erythematosus on both Cheeks.—H. J. Davis, M.B.—Girl, aged sixteen; disease originated two and a half years ago; treated with tuberculin. Disease advancing on palate but receding elsewhere. General health good; patient plump and no pain. Temperature normal.

Mr. HERBERT TILLEY said that the patient had had a big ulcer on the hard and soft palate, and it was, under general anaesthesia, scraped, and pure lactic acid was rubbed in. It almost entirely healed, but to-day it had obviously broken out into a larger ulcer.

Tracheotomy performed Sixteen Years ago for Fixation of Cords in Mid-line, caused by (?) Inflammation of each Crico-arytænoid Joint.—Herbert Tilley, F.R.C.S.—The patient, a man, aged fifty-nine, had a good voice. It was not now necessary to put his finger over the tube when he wished to speak. The case proved the value of tracheotomy, as opposed to removal of a vocal cord.

Mr. TILLEY added that he once removed a vocal cord in such a case as Dr. Davis's (see p. 316) and tracheotomy had eventually to be done. The patient now exhibited came into hospital with acute sore throat and laryngitis of ten days' duration, but the dyspnoea was so extreme that tracheotomy was performed at once and he had remained well ever since. The fixation of the cords must have been due to a local inflammation of both crico-arytænoid joints.

The PRESIDENT referred to the well-known porter of former days at the Golden Square Throat Hospital, who wore a tracheotomy tube for

twenty-five years. He led a very active life, and used to carry patients downstairs from the operating theatre.

Extensive and Rapid Destruction of the Soft Palate by Specific Disease.—**W. Jobson Horne, M.D.**—The patient was a woman, aged twenty-eight. For three months the throat had been sore, and the voice affected. The throat presented extensive perforation and destruction of the soft palate extending to the free border, and active ulceration which had involved the posterior wall of the nasal and oral pharynx. Articulation indistinct. The nasal passages were partially obstructed by what appeared to be gummatous infiltration of the septum, which was a little deflected. The case illustrates the insidiousness and the rapidity of the ravages to the soft palate by gummatous infiltration. Of course this is explained by the fact that the infiltration usually commences on the posterior side of the soft palate, and has been smouldering for some time before it breaks out by a perforation in front.

Mr. MARK HOVELL said he thought that in the case of rapid syphilitic ulceration the use of opium locally and internally was sometimes forgotten.

The PRESIDENT said in syphilitic destruction much damage could be done in a week or ten days. It was in such cases that salvarsan was useful.

Growth from the Trachea.—**W. H. Kelson, M.D.**—Patient is a married woman, aged twenty-four, with no history of tubercle or syphilis. Difficulty in breathing commenced a year ago, and it became noisy three months ago, getting gradually worse. The larynx appeared to be normal. At about one inch below the level of the cricoid cartilage and taking origin posteriorly from the tracheal wall a growth was seen. Many rhonchi and other abnormal sounds were heard in the upper part of the chest. With the assistance of Dr. William Hill the growth was removed by the direct method without tracheotomy under a general anaesthetic, with immediate relief to the breathing and disappearance of the chest sounds. It appears to be a papilloma.

Dr. DUNDAS GRANT had had a case of multiple papillomata of the larynx in a child, in whom dyspnoea necessitated tracheotomy. After opening the trachea the child did not breathe much better, but after some struggling and the removal of the tube the child gave a violent cough and expelled a papilloma of considerable size, which had evidently been growing from the trachea. Breathing was then quite easy. No recurrence took place.

Dr. KELSON, in reply, said that to the naked eye it seemed to be a papilloma, but on looking up the history of such cases it occurred to him it might be something else, such as an aberrant thyroid.

Cystic Condition of Left Arytæmoid in a Tuberculous Subject.—**Andrew Wylie, M.D.**—C. W.—, boy, aged seven, complained of pain on swallowing; six days' duration. The cervical glands are enlarged and painful. Profuse sweating at night and loss of weight. Crepitant râles at the base of the right lung. A large, glistening, cystic swelling is seen covering the left arytæmoid and part of the left vocal cord. The vocal cords are otherwise normal, and there is no sign of infiltration in any other part of the larynx.

Syphilitic Ulceration at the Base of the Tongue.—**Andrew Wylie, M.D.**—Male, aged thirty-five, barman, but formerly a sailor, complains of a slight difficulty in speaking. The epiglottis is swollen. At the base of the tongue there is considerable ulceration of a deep, crater-like character. The patient felt the tongue stiff three months ago, but there has been no difficulty in protruding it. Slight improvement under potassium iodide. There is a history of specific disease.

Dr. H. J. DAVIS thought it was malignant.

Dr. WYLIE, in reply, said he had little doubt that it was a specific ulceration.

Severe Epistaxis associated with Multiple Hereditary Telangiectases.—**George Wilkinson, F.R.C.S.**—Male, aged sixty-two, had suffered for several years from severe nose-bleedings. He was blanched and very weak; the face and front of the neck showed multiple telangiectases. About fifteen distinct raised red spots could be counted, and the small blood-vessels of the skin were conspicuously dilated. There was a well-marked spot on the lower lip, and several bright red spots on the roof of the mouth and tongue. No spots on the body or limbs. He first noticed the spots thirty years ago, and then he began to have nose-bleedings from time to time. The hæmorrhage had only been severe during the last two or three years. One month before seeing the reporter he vomited a large quantity of blood. The source of the blood was found to be the nose and due to multiple hereditary telangiectases (as described by Sir William Osler).¹ Family history: The father died at the age of eighty-three. He had been for many years the subject of bright red spots on the face and lips, and of bleeding from the nose. The bleedings became less severe as he grew older. A younger brother of the patient, who died from the effects of an accident when aged thirty-five, also had spots on the face and occasional nose bleedings. None of the other four brothers and three sisters, or their children, have shown signs of the condition. He has a son, aged thirty-seven, who is quite free, and a married daughter. The latter occasionally bleeds from the nose, but shows no spots. She has four children, the eldest aged ten, none of whom show any sign. Nasal condition (October 16, 1911): Kiesselbach's area on either side of the septum is covered by a number of dilated prominent venules, on which there were signs of recent hæmorrhage. They bled readily when touched. The areas were treated with the galvano cantery after application of adrenalin and cocaine. He was seen a month later. There was still some bleeding. Some of the vessels on the septum had escaped treatment with the cantery owing to their having become invisible after the application of adrenalin. They were touched with the cantery point without previous cocaineisation. He was again seen on January 24. He had completely recovered his health and colour. There had been one or two bleedings during the previous week from the right nostril. Careful examination revealed a small vascular spot high up on the outer wall just beyond the limit of the vestibule. This was treated with the cantery. Since then he has remained free. Chloride of calcium had been given, but the recovery is probably due to obliteration of the vascular areas in the nose by the cantery.

(?) **Papilloma removed from the Posterior End of the Right Inferior Turbinal.**—**George Wilkinson, F.R.C.S.**—The patient, a man, aged forty-seven, complained of absolute stoppage of the nose for

¹ *Quart. Journ. Med.*, vol. i, October, 1907.

four years. Owing to extreme swelling of the mucous membrane, it was only after packing the nose with adrenalin and cocaine that any view could be obtained. Papillary masses filled both choanae. Those on the left side were removed by repeated applications of the snare. The condition on this side was ordinary papillary hypertrophy. The snare wire could not be passed round the mass at the back of the right nostril. With the finger one could feel that the right half of the nasopharynx was filled with a firm, papillary mass. Under general anaesthesia the attachment of this mass was divided from the back of the inferior turbinal by scissors. The mass measures 4 cm. by $2\frac{1}{2}$ cm. by 2 cm. The pedicle measures only 3 mm. in diameter. Microscopically the core of the mass is fibrous, and with a large number of blood-vessels. It is covered with palisade epithelium, which varies much in thickness in different parts of the section. The projecting portions of the papillae have a single layer of epithelial cells only. The subepithelial layer contains numerous (? lymph) spaces, and shows considerable proliferation of endothelial cells.

Dr. PEGLER said he knew of no such example ever having been before the Society, and as the exhibitor had kindly allowed him to see the specimen and microscopic section some days before the meeting, he was able to say that he could find no description of a case like it in the published treatises or atlases of rhinology. He thought it was hopeless to decide the question between inflammatory growth and pure neoplasm, but the history of several papillary hypertrophies having been snared from the adjoining fossa indicated that the large growth projecting into the nasopharynx was of the same essential character—*e.g.* a sort of giant posterior moriform hypertrophy of the inferior turbinal. Also, except for the fact that it contained *no glands*, the microscopic structure showed no intimate departure from that of other papilliform bodies that the speaker had hitherto examined from the floor of the meatus or the inferior turbinal. There were all the familiar features of these growths, but on a very large scale—*e.g.* an exaggeration of seaweed-like arborescence and sinuities of the surface, a coarseness of the fibrous stroma, a multiplication of endothelioid cells, and an enlargement of the spaces that were too often taken to be lymph-spaces in the subepithelial area; but an analogous hypertrophy very rarely overtook the lymphoid nodules so often seen near the free border of the septum when these bodies grew out into large pedunculated masses. The speaker had shown such an example to the old Society many years ago.¹ The pedicle in Mr. Wilkinson's case had developed with the general growth of the unsupported body. Ordinary papillary and moriform hypertrophies were not pedunculated, but this fact would scarcely warrant our naming this specimen a papilloma. In the present state of our nomenclature we had to avoid confusion with the true wart or squamous papilloma.

Mr. WILKINSON replied that since the rejection of Hopmann's views as to the pathology of papillary hypertrophy of the inferior turbinal, pathologists seem to have been rather sceptical as to the existence of soft (as distinguished from horny) papilloma in the nose at all. The tumour was not sessile, but very distinctly pedunculated. In any other situation, such as the rectum, the mass would be regarded as a papilloma. If it were acknowledged that a papilloma could grow from the posterior part of the inferior turbinal, one would expect it to be covered (as was the specimen) with cylindrical rather than squamous epithelium. He suggested that the papillary hypertrophy on the other side of the nose

¹ *Proc. Laryngol. Soc. Lond.*, vol. v, p. 16.

might be secondary to obstruction caused by the mass at the back of the nose, which would produce congestion and stagnation of secretions. References to such a case as that shown were scanty in the text-books, but Kyle mentions papilloma of the naso-pharynx growing from the back of the inferior turbinal as being rare, and as distinct from papillary hypertrophy. In the *Centralblatt* for June, 1905, four cases were recorded as occurring in America. He had not made sections of the other side.

(The growth was referred to the Morbid Growths Committee.)

Molar Tooth removed from Right Bronchus by Upper Bronchoscopy.—George Wilkinson, F.R.C.S.—The patient, a youth, aged seventeen, was brought to the reporter direct from the dentist's, in whose consulting-room the accident had occurred. The left lower wisdom-tooth was being extracted under gas when he began to come round and struggle. The tooth was knocked out of the grasp of the forceps into the throat and disappeared. He complained of some pain in the right side of the chest. On examination, breath-sounds were completely absent from all parts of the right lung. The radiograph showed the shadow of the tooth anteriorly opposite the second intercostal space, $\frac{1}{2}$ in. from the sternum. Upper bronchoscopy was performed with the patient under chloroform in the left lateral position. The tooth was seen to be lying obliquely, crown upwards, in the right bronchus, the roots being in the entrance of the upper (eparterial) lateral branch. It was too large to be brought through the (9 mm.) tube. At the first attempt at extraction it was dislodged from the grip of the forceps when the glottis was reached, and fell back into the lower part of the trachea. At the second attempt it was brought into the mouth, where it was secured by the house-surgeon. The patient made an uninterrupted recovery.

THE PRESIDENT said there was difficulty in bringing such bodies through the Killian tube, as they often hitched against the end of the barrel and got knocked off. It was better to remove foreign body and tube all in one.

Lantern Demonstration of X-ray Photographs illustrating Diseases of the Accessory Sinuses.—W. Ironside Bruce, M.D.—In the X-ray examination of the bones of the face the sinuses are demonstrable in virtue of the air they contain. The only mechanical difficulty is the great density of the occiput. This was overcome by projecting the radiation through the skull, above the occiput, and in the recumbent position in which these shadows are secured; we place the head well inclined backwards, the forehead making an angle of about thirty degrees with the horizontal. The X-ray tube is then arranged symmetrically behind the head in a position exactly corresponding to the nasal process of the frontal bone. Should the sinuses contain fluid their opacity is obscured, for fluid is dense to X ray. Lantern-slides are positives, and the area corresponding to the fluid is dark.

Dr. H. J. DAVIS thought a case of acute coryza would present difficulties, as there was sure to be fluid in the sinuses in such a case. And if there were fluid in the antra and it was clear, there would be very little alteration in the degree of translucency on both sides.

Dr. FITZGERALD POWELL said that in the case of fluid, such as hydrops, or antral cysts, the translucency was very much increased, and showed brighter than on the normal side.

Dr. IRONSIDE BRUCE, in reply, said he did not think there would be

any difference in the opacity of sinuses filled with fluid compared with that when they were full of pus. There were some bone changes he had heard Dr. Hill refer to particularly in connection with acute conditions of the sinuses; by X-ray examination it was possible to recognise changes in the frontal bones, which would indicate that the accumulation was not fluid, but pus.

Paralysis of the Right Vocal Cord following Injury to the Recurrent Laryngeal Nerve.—**Arthur Evans, M.S.**—**M. W.**—, a female, aged fifty, was operated upon in May, 1910, for a rapidly growing fibro-adenoma in the isthmus and right lobe of the thyroid gland. Previous to the operation she had complained of "pains in the chest and a feeling of suffocation"; these symptoms were worse at nights. There is complete paralysis of the right vocal cord. She has had bad attacks of difficult breathing, which have recently become more frequent and severe; they now last fifteen or twenty minutes, and occasion great distress; the patient says she feels as though she "must choke."

The PRESIDENT said it would be interesting to know whether the paralysis came on at once, or only after a time. It was not always that the surgeon could be blamed for it, as the nerve might become fixed in the contraction of the scar.

Vincent's Angina.—**George W. Badgerow, F.R.C.S.Ed.**—The patient was a boy, aged five. A deep punched-out ulcer, with a sloughy base, appeared on the left tonsil, the glands were swollen in the neck on both sides, and he had a temperature of 99° F. A swab was taken, the fusiform bacillus and spirillum being found.

Herpes of the Palate.—**C. W. M. Hope, F.R.C.S.**—The patient complains of sore throat, which started on the left side four days ago, causing pain on swallowing. Has had several attacks of herpes on body and limbs during last three years. Last attack six months ago. Present condition: Vesicles on right half of palate and pillars. On left side vesicles run together, ruptured, and now show as aphthous patches. Had pain till mid-day to-day, none now. Glands enlarged on both sides of the neck.

The PRESIDENT said that although one saw aphthous-like patches left it was very rare to see the vesicles. Generally in his cases the vesicles had collapsed, and there was only the aphthous patch visible when patient reached the meeting.

Gumma of the Thyroid Cartilage.—**F. F. Muecke, F.R.C.S.**—Patient first noticed swelling three months ago, which fairly rapidly increased so as even to interfere with swallowing; began to lose the voice at the same time. Large semi-cystic swelling over the thyroid cartilage, and exactly following the outlines of the right wing. The right side of the larynx is swollen and ulcerated, the right cord red and ulcerated. Numerous other signs of specific disease are evident. Under anti-specific treatment the growth has diminished rapidly.

? Dental Cysts inside the Nose.—**F. F. Muecke, F.R.C.S.**—The cysts project into the sides of the nares, and push forward the bases of the alae nasi. Both first bicuspids are defective.

Mr. CLAYTON FOX said that the swellings were soft and collapsible. There was no evidence of dental cyst, which was usually solid and

produced egg-shell crackling on palpation. The anterior ends of the inferior turbinated bodies had been removed, and what remained appeared to be cavernous tissue with some scar-tissue.

Dr. FITZGERALD POWELL considered it was cyst in the floor of the nose, and he felt distinct fluctuation. It appeared to be bilateral or extending into both nostrils.

The PRESIDENT said he thought that on the right side there was a cyst on the floor of the nose. It had generally been agreed that they were almost exclusively of dental origin.

Epithelioma of the Larynx.—Walker Downie, M.B.—Married woman, aged forty. Complained of sore throat for three months (March till June). Every time she swallowed she had sharp pains shooting up to the right ear. There was an accumulation of mucus in her throat at all times, and she had much discomfort and trouble in trying to remove it. There was a large hard mass extending downwards from the angle of the lower jaw on the right side; it was deep-seated, firm and fixed. Laryngoscopic examination revealed great swelling of the right arytenoid, with ulceration on its upper and laryngeal aspect; the right ventricular band was also so much swollen as to overlap and wholly cover the right vocal cord. There was œdema of the left arytenoid and ary-epiglottic fold. I advised against operation, but one of our most able surgeons thought the removal of the affected parts possible. He removed the tumour in the neck, ligaturing the carotid and the jugular, excised the larynx and the upper part of the œsophagus. The patient did well for three days, then symptoms of cerebral degeneration ensued, and she died.

Microscopical Sections from a Case of Tuberculous Ulcer of the Larynx; the First suggestive of Epithelioma, the Second of Non-bacillary Tuberculosis. ? Lupus.—J. Dundas Grant, M.D.—The case was shown at the meeting of the Section on November 3, 1911. *Pathologist's Report.*—Section of fragment from larynx reported as very suspicious. The epithelial activity is so marked that it is strongly suggestive of early malignancy. Section of fragment removed on November 29, reported as typical tuberculoma. Giant-cells and epithelial infiltration unmistakable. Stained for *Bacillus tuberculosis* with negative results. There are no signs of caseation, while there are very few of fibrosis. Consequently, in the absence of *Bacillus tuberculosis* it should be lupus.

Intrinsic Carcinoma of Larynx removed under Infusion Anæsthesia with Hedonal.—Walter Howarth, F.R.C.S.—This case is shown to bring forward the great advantages that this method of anæsthesia affords in this class of case. The anæsthetist is removed from the field of operation; there is no tendency to spasmodic cough and straining, as is often the case when the trachea is opened and chloroform vapour pumped directly on to the mucous membrane of the trachea. There is less bleeding and tendency to ooze, but this is probably dependent on the complete relaxation and immobility that is obtained. The time required for the operation is thus much reduced and shock diminished. The tumour removed in the present case was an epithelioma involving the whole of the left vocal cord. The tracheal wound, as well as that in the thyroid cartilage, was closed at the end of the operation.

The PRESIDENT congratulated Mr. Howarth, because the new cica-

tricial vocal cord was already well formed. Laryngo-fissure was an excellent occasion for using the intra-venous method of anæsthesia.

Mr. HOWARTH, said that hedonal was a urethane derivative, and was allied to veronal. He had operated in about a dozen cases and had been most pleased with the anæsthesia. He thought that it could be considered a safe anæsthetic.

Tuberculous Ulceration of the Pharynx and Larynx.—Walter Howarth, F.R.C.S.—The patient came to hospital complaining of pain on swallowing. The posterior wall of the pharynx is markedly ulcerated, and the left side of the epiglottis and epiglottic fold and left arytenoid are infiltrated and swollen. There are no signs in the lungs.

The PRESIDENT suggested that the exhibitor should apply the term "lupus" to it, as clinically it was distinct from tuberculosis, although there was the same pathological foundation for both.

Cystic Swelling of the Nose.—Walter Howarth, F.R.C.S.—The patient has noticed the tip of his nose becoming larger for the past few years, but says that the condition has been present since birth. The end of the nose is rather bulbous in appearance, and is uniformly distended by an elastic fluctuating swelling. The skin is not involved. The patient is very anxious to have some form of operative treatment.

Several members thought the swelling was a lipoma.

PROCEEDINGS OF THE SOCIETY OF GERMAN LARYNGOLOGISTS.

Eighteenth Annual Meeting at Frankfort-a-M. on May 31 and June 1, 1911.

Condensed Report by the Secretary, DR. RICH. HOFFMANN (Dresden).

President—Prof. KILLIAN (Berlin).

(Continued from p. 229.)

Ulceration of Larynx, Trachea and Œsophagus in Scarlet Fever.—Oppikofer (Basle).—The author made a collective examination at the Basle Pathological Institute of the autopsies in scarlet fever cases of the last thirty-seven years, and found that the larynx is much more frequently affected than is at present usually supposed. In about one half of the fatal cases of scarlet fever the same necrotic inflammatory changes existed in the laryngeal entrance or interior, and sometimes also in the trachea as in the pharynx. The bacteriological examination had given streptococci and staphylococci and not diphtheria bacilli. The laryngeal ulcers due to the necrotic inflammation are sometimes superficial and sometimes deep, and in the latter case often appear as if punched out. The ulcers may be isolated, but for the most part are multiple. In 8.2 per cent. of all cases scarlatinal angina showed itself in the œsophagus also in the shape of a discoloured deposit and ulcers, either throughout its whole length or over certain areas.

KILLIAN (Freiburg) had seen stenosis of the œsophagus following diphtheria in a young child, caused, he supposed, by a similar process.

SIEBENMANN (Basle) asked what spots were principally affected by the scarlatinal ulcers, and whether they were to be found particularly where there was much adenoid tissue.

OPPIKOEFER replied in the affirmative to the last question, but stated that there were no actual seats of election, with the exception of the posterior wall of the larynx, where such ulcers are certainly very frequently met with.

Arrest of Hæmorrhage in the Larynx by means of Suture with Clips.—**Blumenfeld** (Wiesbaden).—In a case of dangerous bleeding, which followed removal of the epiglottis and a portion of the aryepiglottic fold, the author applied the suture clips devised by Avellis for the pharynx, whereupon the bleeding ceased at once and did not recur. The clips were removed after six days; recovery.

KÜMMEL (Heidelberg) mentioned that in like manner a Kuhn's tube could be introduced, along side of which packing could be very effectively carried out.

The Treatment of Laryngeal Tuberculosis.—**A. Hartmann** (Heidenheim).—Hartmann communicated his experiences in regard to cases of, for the most part, advanced laryngeal tuberculosis treated by him in the Virchow Hospital. For the removal of the adherent sticky secretion so often present Hartmann employs a 2 per cent. cocaine spray and insufflations of sodium bichlorate. For further treatment he uses inhalations of menthol and creosote-turpentine (1 in 20) by means of the inhalation mask recommended by him on a former occasion. After this treatment the patients feel greatly relieved, and the stimulus to cough is diminished. Healing is favoured by insufflation of lenicet (acetate of aluminium) or lenicetepirenin. Hartmann succeeded in doing away with the severe pain on swallowing by the introduction of the orthoscope, the conical-oval laryngeal spatula. The stretching of the larynx exerted a favourable influence on the pain. Operative measures with the galvanocautery, with cutting forceps, or with the snare are likewise carried out most safely with the help of the orthoscope by the direct method.

The Specific and Local Treatment of Laryngeal Tuberculosis.
Edmund Meyer (Berlin).—Tuberculin treatment should be more employed in laryngeal tuberculosis. Favourable results may be obtained by its means not only in sanatoria and hospitals, but also among out-patients who live at home and continue to follow their occupations. When the general condition is bad, and especially when there are high fever and extensive tuberculous changes in the larynx, tuberculin is contra-indicated. It is of small importance what preparations are employed. The dose must be selected so as to avoid general reaction as much as possible. The local reaction is with bacillary emulsion slight—only a serous infiltration with sometimes a thin, cloudy, fibrinous deposit. The treatment produces especially an improvement of the general health and increase of weight and appetite. Healing of the laryngeal lesion is observed only when the ulceration is superficial. When extensive changes are present local surgical treatment of the larynx must be combined with the specific. The infiltrated parts should be removed as extensively as possible with cutting instruments at separate sittings. Galvano-caustic treatment is best confined to flat infiltrations which cannot be grasped with cutting instruments.

SIEBENMANN (Basle) considered it good surgery to attempt with the galvano-caustic treatment to reach all the diseased portions at a single sitting. A very valuable adjuvant of the cauterly is the X-ray treatment of laryngeal tuberculosis. In his experience closed deep infiltrations are especially suited for this method.

FRIEDRICH (Kiel) agreed that the choice of preparation in tuberculin treatment was of comparatively small importance, and that the treatment could be employed for out-patients without risk. He asked Dr. Meyer in what manner the tuberculin treatment of laryngeal tuberculosis should be conducted and how long it should be continued; also whether any detriment followed the sudden cessation of such treatment.

KATZ (Kaiserslautern) had on several occasions seen evidence of renal irritation after these inhalations of turpentine.

KÜMMEL (Heidelberg) held that very excellent results were obtainable by injections of iodoform-glycerine into the deep infiltrations.

NÖLTENIUS (Bremen) adopts the ambulatory treatment with mixed tuberculins, adapting it strictly to the needs of the patients and keeping them under careful observation. The contents of a tube are injected about twice a week and the dose slowly increased. The treatment is continued for about five to six months. The galvano-cauterly should be vigorously used. For pain on swallowing, alcohol injections into the superior laryngeal nerve are to be warmly recommended.

KILLIAN (Freiburg) had frequently seen, in cases with healthy larynx, an outbreak of miliary tubercle in the laryngeal mucous membrane after large doses of tuberculin. With the small doses employed at the present day this is scarcely to be feared, although exceptionally the larynx may become affected with tubercle even after the smallest dose. Vigorous treatment with the galvano-cauterly may give rise to oedema, requiring tracheotomy, and should certainly be avoided.

MEYER, in reply, said that he had never seen complete healing in either laryngeal tuberculosis or lupus from X-ray treatment. The duration of the tuberculin treatment is on the average four to six months. It must depend in every case upon the general condition of the patient, his tolerance of the dose employed, and his sensitiveness to the tuberculin injections. He had never seen untoward effects from a sudden cessation of the treatment. Especial care as regards the dose is, of course, necessary on recommencing the treatment. Meyer had only observed spontaneous improvement in laryngeal tuberculosis in quite superficial ulcerations.

A New Method of Treating Paralysis of the Recurrent.—Brünings (Jena).—In cases of long-standing unilateral recurrent paralysis with loose flapping atrophic cord, Brünings had by the following method removed or diminished the vocal troubles (weak voice, hoarseness, air-waste) as well as those of respiration (insufficient action of the abdominal pressure and inability to clear the throat). He injected hard paraffin in several sittings into the paralysed cord, until the latter had attained approximately the shape and position of a phonating cord. The result was sometimes brilliant (even as regards the tone of the voice) and was always gratifying. Air-waste and respiratory troubles disappeared in every case. The paraffin injections were carried out with a screw syringe with long needle of special shape by the direct method and the author's counter-pressure autoscropy. Given skilful manipulation success might no doubt also be anticipated with the indirect method.

FINDER (Berlin) had in a case of marked difficulty of phonation

obtained improvement from the use of a pad which exerted slight pressure on the paralysed half of the larynx.

KILLIAN (Freiburg) thought it should be used only as a last resource.

NEUBERGER (Frankfort-a-M.) agreed with Killian.

BRÜNNINGS, in reply, stated that the paraffin injection presented no considerable difficulties. It was effective in relieving the patient, and gave rise to no oedema worth mentioning. It was suitable only for old cases with marked atrophy. Whether the paraffin would be tolerated for any length of time the future alone would show.

On Laryngostomy.—H. Marschik (Vienna).—The author reported eleven more cases of laryngeal stenosis treated by the method of laryngostomy, and demonstrated the form which the so-called winged obturator has assumed as the result of the most recent experience and modification.

HINSBERG (Breslau) had seen excellent results from treatment with Mikulicz's glass tubes.

FINDER (Berlin) described a case of multiple recurring papillomata in a child, in which laryngostomy had failed.

KILLIAN (Freiburg) recommended that in place of treatment with obturators, which seemed to him to cause too much irritation, the larynx should be held open by means of rubber sponge. For the treatment of papillomata he advised, instead of laryngostomy, the removal of the largest growths, arsenic, and X rays applied from without.

HARTMANN described a case of syphilis, which had undergone several courses of mercury and iodides and three tracheotomies, and in which an extensive sequestrum had formed from necrosis of the cricoid, nothing of which was visible on laryngoscopy. Recovery took place. In cases of difficulty in getting rid of the cannula he advised that care should be taken that the upper portion of the cartilage may not be pressed inwards by the cannula. Should this occur the cartilage must, in order to establish free breathing, be drawn outwards, and sutured in this position.

Scleroma.—F. Pick (Prague).—Pick drew attention to the great changes which have in recent years taken place in the current theories as to scleroma. From the statistical standpoint, on the one hand, Schrötter, Gerber, Juraecz, and others, have shown that the disease is not to be regarded merely as a sporadic affection, but that in certain localities it takes on an epidemic character. On the other hand, the further spread of endoscopic methods of examination has taught us that the affection of the outer nose, by far the most striking and until recently the best known manifestation of the disease, as a matter of fact is to be found in only a small percentage of the cases, while the naso-pharynx and larynx are affected with much greater frequency. Especial importance attaches to those cases, often for a long time misinterpreted, in which the whole process is situated in the subglottic region. The author reported a case of this kind observed by himself, the patient being a young man who had spent all his life in German Bohemia and in Chemnitz (one and a half years). Scleroma has in general been regarded as a disease affecting only Slavonic and Jewish races. Statistics, however, of the cases hitherto met with in Bohemia, as shown and tabulated by the author in continuation of Frankenberg's work, have proved that scleroma in recent years has advanced definitely in a westerly direction, and is found even among the inhabitants of German Bohemia.

The author proceeded to mention various remarkable features of

the pathology of the disease, our knowledge of which is still far from clear in spite of the discovery of the bacillus of Frisch: Slight contagiousness of the disease, notwithstanding that the bacillus is easy to cultivate and grows rapidly; the rarity of positive results of animal inoculation, etc. He had attempted to obtain a cutaneous reaction similar to that of von Pirquet by means of an extract of scleroma bacilli, but without success. As regards treatment, in addition to surgical methods ("606" certainly kills the bacilli rapidly *in vitro*, but is without influence on intra-venous injection in man), the X rays require special mention. This method, as photographs show, is very successful not only when the disease is superficially situated, but even, as the author had observed in tracheal scleroma, when rays of sufficient penetrating power are employed.

MEYER (Berlin) had observed a favourable influence from X rays in scleroma, but in his experience a cure was not obtained.

ZWILLINGER (Budapest) regarded the X rays as a means by which a cure of the disease is possible.

HINSBERG (Breslau) stated that permanent cures were obtained by means of X rays.

POLYAK (Budapest) mentioned the discovery of the scleroma bacilli in the lymph-glands of the affected area. He had obtained marked improvement in the nasal disease from the use of radium.

Bronchoscopy in Young Children.—Killian (Freiburg).—Killian had collected a series of cases in which superior bronchoscopy had in young children made possible the removal of the foreign body, but had given rise to swelling in the subglottic space, which led in the course of one to two days to intubation or tracheotomy. The patients were for the most part children between the first and the fourth year. The irritation was due to the selection of a somewhat too tightly fitting tube, to its frequent introduction and prolonged use, and to the particular nature of the foreign body. In most cases the latter was one of the kernels which are so rightly dreaded on account of their swelling propensities. It must also be supposed that in a number of the cases a subglottic swelling had already arisen before the bronchoscopy from repeated impact of the movable foreign body. It would in future be necessary to exercise especial care in the choice and introduction of bronchoscopic tubes. With this object in view the width of the subglottic space of a series of fresh larynges of children was ascertained by means of metal bougies. It became apparent that not the age but the size of the body stood in closest relation to the size of the larynx and especially of the cricoid lumen. The width of the tube is therefore to be fixed in accordance with the size of the body. The length of the tube also, of course, stands in direct relation to the size of the body. New measurements of length were undertaken to fix this relation also.

The tube is best passed through the child's larynx under guidance of the eye, and through a simple or split tube-spatula. For passage of the subglottic space it is well to use a hollow obturator with rounded end.

MANN (Dresden) was able to confirm Killian's remarks. He advised that the experienced alone should examine children of a certain age by upper bronchoscopy; the less experienced should have immediate recourse to tracheotomy.

MARSHIK (Vienna) was in favour of a retention of upper bronchoscopy under the precautions mentioned by Killian. Untoward results were due to the examination being too prolonged. They could not be

altogether avoided because the difficulties which might arise could not be foreseen.

KILLIAN, in reply, could not say in exactly how many cases under one year of age upper bronchoscopy had been performed. The unhappy results in some cases show the need for care. Catarrh, of course, alters the condition of the mucous membrane, and renders it more easily injured. As a general rule too thick tubes have been used.

The Ætiology of Smooth Atrophy of the Surface of the Tongue.

—KATZ (Kaiserslautern).—The subject still remains one of controversy, partly from the varying conception which different authors have of the term "lingual surface." At all events those authors who trace a causal connection between syphilis and smooth atrophy have put forward better evidence—clinical, histological, and statistical—in support of their view than have their opponents. The author, as a result of his own experience, had arrived at the result that it is not syphilis alone that leads to smooth atrophy of the lingual surface, but an accidental inflammatory affection attacking a soil already prepared by syphilis. The macro- and microscopic appearances were discussed.

BRIEGER (Breslau) believed that a connection did not in all cases exist between smooth atrophy and syphilis. Unfortunately, up to the present we are familiar only with the quiescent stage, the true smooth atrophy, while we know absolutely nothing of the intermediate stages, from which we might gain information as to the influence of the inflammation which the speaker supposed to occur.

KATZ, in reply, stated that the results obtained by those investigators who traced a connection between smooth atrophy and syphilis were more satisfactory than those of the authorities who referred the disease to other causes. It was a noteworthy circumstance that in spite of the frequency of syphilis of the lingual surface typical smooth atrophy was so seldom seen.

GastroscoPy (Demonstration).—Elsner (Berlin).

—The author referred to the historical development which gastroscopy has passed through in the last thirty years. The problem of gastroscopy as a method of practical value remained completely unsolved until a few years ago. The author had constructed a gastroscope which appeared to fulfil all requirements for practical usefulness. It was very simple in principle and construction, and its use was easily learned. The method besides, as employed by Elsner, was without danger, and could be made use of in the great majority of the cases in which it is desirable to obtain a view of the interior of the stomach. In the author's opinion, therefore, there was no further obstacle to the routine use of his gastroscope. He had up to that time carried out with his gastroscope some 400 examinations. He had already met with a series of cases in which he had been able to clear up with its help the question as to the presence or absence of carcinoma. In conclusion he demonstrated the gastroscopic appearances in a number of normal and pathological cases. Among the latter were included pictures of gastric ulcer and carcinoma.

MANN (Dresden) had worked for a long time with the instruments of Loening and Stieda and regarded them as useful, although they could not be employed in all cases. The authors he had mentioned had brought out a whole series of pictures of the stomach.

HENRICI (Aachen) related his own experiences with various forms of gastroscopy. He discussed their advantages and disadvantages, and

asserted that the pylorus remains closed, and not open as stated by Loening and Stieda.

ELSNER, in reply, said that the real object of all efforts to perfect gastroscopy was, of course, to make it of value from the clinical standpoint. The gastroscopes hitherto employed, including that of Brünings, had various disadvantages, which the speaker discussed. Loening had published four coloured pictures of the stomach, but no pictures of carcinoma and ulcers like those of the speaker.

A New Method of Injection for Deformities.—Brünings (Jena).—The method consisted of a transplantation for cosmetic purposes of fat tissue by means of an injection syringe. Brünings found that it was possible to inject subcutaneously fatty tissue, cut into small pieces, through a screw syringe similar to that used for paraffin injections, but with very wide and short cannula. In the four cases (of nasal deformity) hitherto treated healing took place without reaction and with satisfactory result, as to the duration of which, however, he had had as yet no sufficient experience. The advantages, as compared with the methods of fat transplantation employed up to the present, lie in the avoidance of scars and the need for general anæsthesia.

MANN (Dresden) mentioned a publication of Holländer, who in like manner injected fat for cosmetic purposes.

RITTER (Berlin) expressed the fear that in saddle-nose the stretched skin would flatten down again the injected fat.

BRÜNINGS, in reply, said that a sharp edge could be produced by means of small pieces of fat; they did not wander like paraffin, but remained well in place.

Instructive Instances of Mistaken Diagnosis in Cases of Tuberculosis of the Upper Air-Passages.—Avellis (Frankfort-a-M.).—The cases included one of a child, whose brother had died of tuberculosis, and in whom a diagnosis of pulmonary tuberculosis has been made. The error was due to the fact that the family physician had not himself examined the sputum, but had trusted to a laboratory in which an old microscope slide had been used, and the bacilli from the sputum of a former case discovered, the result being a confirmation of the erroneous diagnosis. Other cases were those of hæmoptysis in which the bleeding came from the pharynx, or from tracheal varices, and was due to congestion of the circulation. Tracheal bleeding frequently followed coitus among other things. Another case was one of late hereditary syphilis in a healthy man, aged twenty-seven, who had never been infected. A piece of ulcerated tonsil removed for examination was diagnosed on histological examination as tuberculous. That this was an error only became apparent after a considerable time, as the result of a cure taking place with iodide, and a correction by the pathologists of their mistake. In another case, a granulating tumour of the maxillary antrum, which had broken through into the middle meatus, was diagnosed after removal by operation as small-celled sarcoma. No recurrence took place. It was, however, subsequently proved by tuberculin injection that the condition was one of tuberculosis, and that the tumour was a large and rare tuberculous growth of the antrum. Too much reliance was not to be placed on histological diagnosis; clinical signs were of greater value.

The Treatment of Choanal Atresia.—Von Eicken (Giessen).—The whole of the vomer was removed by submucous resection, after which the bony plate of the atresia could be stripped of mucous mem-

brane and removed with a few strokes of the chisel. The membrane closing the choana, which now consisted only of muco-periosteum, was then removed together with the posterior third of the two muco-perichondrial curtains of the septum. The septal wound thus came to be placed at so great a distance from the wound surface corresponding to the lateral attachment of the choanal diaphragm, which had been removed, that all risk of reunion of the raw surfaces was excluded. Apart from packing the anterior two thirds of the nose no after-treatment of any kind was required.

A New Procedure for Overcoming Stenosis of the Lachrymal Duct.—**Von Eicken** (Giessen).—The antrum having been widely opened under local anæsthesia through the canine fossa and inferior meatus, the bone bounding the lateral wall of the lachrymal canal, which usually shows a definite bulging into the antrum, is removed by careful blows of the chisel. This is followed by removal of the bone and nasal mucous membrane which form the mesial wall of the canal. In this manner the entire lachrymal canal, up to the point where it becomes continuous with the lachrymal sac, can be laid bare. It is sometimes necessary to chisel out also a portion of the processus frontalis of the upper jaw. The membranous canal can now be split on its mesial or lateral surface and partly or completely removed. Six cases were reported which had been unsuccessfully treated for stenosis of the lachrymal canal by means of sounds, and which were treated by the new method. In one case no improvement took place, because the lachrymal sac, as was later shown on removal of it, was greatly shrunk, and almost devoid of lumen. In a second case the tear-passage was indeed made free, but the epiphora and tendency to adhesion of the lids, resulting from conjunctivitis and blepharitis of more than twenty years' standing, still persisted. In four cases complete cure took place with free passage of the tears, as was proved by the fluorescein-potassium test. In two of the cured cases a dacryocystitis occurred, which completely subsided. In three of the six cases suppurative disease of the antrum existed before operation, and was cured with the other condition. In three cases a healthy antrum was opened, without giving rise to secondary suppuration. The method has the advantage, as compared with the endo-nasal methods, of affording an excellent view, and, given a proper technique, may be performed practically without pain. The function of the tear-sac, so important from the physiological standpoint, is retained. There is no external scar.

POLYAK (Budapest) had in a case of dacryo-cysto-blenorrhœa passed a sound into the duct as far as the stenosis, and opened the duct from the middle meatus with complete success.

REUSE (Königsberg) said that troubles of the tear-conduction apparatus were sometimes due to pathological changes in the inferior meatus (*e. g.* foreign bodies), or about the middle of the duct opposite the anterior end of the middle turbinal (obstruction of the duct from outward pressure of the middle turbinal, etc.); or finally, they might be caused by inflammatory processes in the anterior ethmoid cells. Even when rhinoscopy showed no evidences of such a condition the X rays might supply the proof.

SCHMIEDT (Leipzig-Plagwitz) believed that operations on the duct were only successful when the lachrymal sac was not dilated nor atrophic. When the latter is the case, removal of the sac or of the lachrymal gland is necessary.

UFFENORDE (Göttingen) said that tuberculosis was very often the cause of stenosis of the nasal duct.

VON EICKEN remarked, in reply, that endo-nasal methods sometimes did succeed, but in other instances failed, owing to the fact that bleeding was more apt than with his method to obscure the view. He recommended his operation especially for deep-seated and extensive stenoses. In two cases marked dacryocystitis with dilatation of the lachrymal sac subsided.

Microscopic Appearances of Twenty Maxillary Cysts.—**Oppikofer** (Basel).—The author undertook the microscopic examination of nineteen dental root cysts and one follicular cyst. The inner lining consisted of regular flattened epithelium, which was, however, often absent over large areas. Vessels were present in some places in the squamous epithelium, and it was easy to prove that these vessels originated from granulation-tissue, and in fact represented tangential sections through extremely fine and slender papillæ. The cyst-wall consisted, in addition to the squamous epithelium of granulation and connective tissue, which contained not infrequently pigment, crystals of cholesterol and foreign body giant-cells. Pronounced degeneration in the epithelium or in the connective tissue, as mentioned by some authors, was not to be observed. In regard to the bone surrounding the cysts, it may be stated that there were signs of very active proliferation; the osteoblasts were much more numerous than the osteoclasts.

Examination with the Mirror in Diverticulum of the Hypopharynx.—**O. Wagener** (Giessen).—As the outcome of the researches of Killian the so-called pressure diverticula of the œsophagus are to be classed as diverticula of the hypopharynx. The diagnosis is based, in addition to the characteristic history, on the results of sounding, X ray examination, and especially direct œsophagoscopy. Von Eicken succeeded in determining, with the laryngeal mirror, the formation of froth in the hypopharynx as a typical feature in several cases. This sign appeared to be characteristic of diverticula of the hypopharynx.

Demonstration of a Dangerous Condition of the Frontal Bone.—**Boenninghaus** (Breslau).—The olfactory groove projected as a ridge into the frontal sinus, a condition which might have been of serious import had a wide opening been made into the sinus.

Orbital and Cerebral Complications in Acute Suppuration of the Frontal Sinus.—**Manasse** (Strassburg i. E.).—**CASE 1:** A child, aged eight, with acute suppuration of the antrum and orbital cellulitis of one day's duration. Operation: Antrum opened with the chisel; fistula in its roof leading into the orbit; fistula widened and orbital abscess evacuated and drained through it. Healing without opening the orbit from without.

CASE 2: Young woman, aged twenty-one. Acute suppuration of ethmoid and antrum of the left side with grave cerebral symptoms. Death. Post-mortem, large intra-meningeal abscess of right cerebral hemisphere.

CASE 3: Man, aged twenty-six, with acute left-sided accessory sinus suppuration together with orbital cellulitis. After operation satisfactory progress to begin with, but three weeks later signs of cerebral complications. The second operation disclosed a large abscess in the frontal lobe.

Recovery. Demonstration of the patient and microscopic preparations of the bone which separated the frontal abscess from the primary focus of disease, this bone appearing normal to the naked eye.

Retention of the Anterior Wall of the Frontal Sinus in the Radical Operation.—**G. Ritter** (Berlin).—The author described a method of his own, by which the orbital wall only was removed, and the sinus cleared out from below, if necessary with the assistance derived from a small counter-opening in the frontal wall, corresponding to the highest portion of the cavity. The advantages, as compared with the usual osteoplastic methods, consisted in the following points: (1) The anterior wall of the frontal sinus was left undisturbed. (2) The orbital recesses were removed and obliterated, and the cavity of the sinus thereby diminished. (3) The radical operation on the ethmoid is performed at the same time and through the same incision. (4) If necessary Killian's radical operation can very easily be carried out later under local anaesthesia and the cavity obliterated, so as to obtain a certain cure. Eleven out of twelve cases treated in this manner recovered; in one case subsequent resection of the anterior wall was required. The cosmetic result was always excellent.

Practical Experiences of Retention of the Anterior Wall of the Frontal Sinus in the Radical Operation for Chronic Suppuration.—**Hoerner** (Leipzig).—The speaker demonstrated plaster casts, photographs, and radiographs of patients on whom the frontal sinus operation after Ritter's method had been performed half to one and a half years previously. Healing was perfect and the cosmetic effect very good.

Caseous Rhinitis; Cheesy Empyema of the Antrum with marked Displacement of the Nasal Septum.—**Bouvier** (Giessen).—The patient had suffered for two years from right-sided nasal obstruction, and for one year from bilateral anosmia. Examination and washing out the antrum through an alveolar opening disclosed a cheesy inflammation of the maxillary sinus. The antrum and right nasal cavity had been converted by disappearance of the lateral nasal wall and the middle part of the inferior and middle turbinates into a single cavity, which was filled with exceedingly foetid cheesy masses. The pressure thus exerted had produced a deviation of the septum to the left, so as to obstruct completely the left nasal cavity. Cure resulted after a few thorough irrigations. Septal deformity corrected. Empyema evidently of dental origin; no other apparent cause.

A Rare Discovery in a Rhinolith.—**Guttmann** (Prague).—The nucleus of the rhinolith, a cherry-stone, had apparently, according to the history, lain in the nose for over fifty years. Chemical analysis showed, in addition to the salts usually found, a relatively large amount of oxalic acid, so much in fact as 0.6 per cent., which was more than had previously been found in a rhinolith.

Attention is called to the fact that it was decided at the business meeting that the next Congress should take place at Hanover.

Professor Seifert (Würzburg) was elected President, and Dr. Hansberg (Dortmünd) Vice-President.

In place of the retiring members of the Council there were elected Professor Jurasz (Lemberg), Professor Killian (Freiburg), Geheimrat Heymann (Berlin), and Professor Spiess (Frankfort-a-M.).

Thomas Guthrie (Trans.).

THE FRENCH SOCIETY OF LARYNGOLOGY, OTOLOGY AND RHINOLOGY.

May, 1911.

President : E. ESCAT (Toulouse).

Reported by A. R. SALAMO (Paris).

(Continued from p. 124.)

A Halfpenny impacted in the Thoracic Portion of the Œsophagus; External Œsophagotomy.—*Texier* (Nantes).—A child, aged five, had a halfpenny impacted in the œsophagus on a level with the fifth dorsal vertebra. Extraction with Kernisson's hook was impossible. Œsophagoscopy could not be practised owing to swelling of the gullet. External œsophagotomy was performed. The coin was removed with forceps and the œsophageal wound closed with catgut sutures; recovery.

Some Cases of Foreign Bodies of the Œsophagus and Bronchi.—*Mouret* (Montpellier).—The author reported seven cases of foreign bodies of the œsophagus removed by œsophagoscopy and a case of impaction of a cherry-stone in the bronchus supplying the upper lobe of the left lung. The foreign bodies were—four times bone, once a halfpenny, unmaasticated meat twice. One of the bones measured 4 cm. in length, 3 cm. in breadth and 5 cm. in thickness: it could only be extracted piecemeal. Suppurative œsophagitis resulted, giving rise to sanious pus with a faecal odour. The author followed up these observations by the following considerations: (1) The seat of impaction of foreign bodies may be—(a) the upper extremity of the œsophagus; (b) the aorto-bronchial constriction; (c) the cardiac end. (2) Exploratory soundings and attempts at extraction with Graefe's coin-catcher or Kernisson's hook generally resulted in driving in the foreign body (if it was thin) against the anterior wall of the œsophagus, and if the body was arrested at the upper end of the tube in concealing it under the jutting of the lower border of the cricoid ring. The operator ought, therefore, to concentrate his attention particularly on the anterior wall, for it is not uncommon for the œsophagoscope to glide behind the foreign body, if this be flat and has been pressed forwards by previous manœuvres. (3) Employment of the œsophagoscopic tube facilitates the extraction of foreign bodies too large to allow of removal *viâ* the tube. In this case one withdraws the tube and foreign body together, the latter being held by forceps: the tube serves as a guide of exit, keeping the œsophageal walls apart and dilating the crico-pharyngeal isthmus before the foreign body. It thus reduces to a minimum secondary arrest against the inferior border of the cricoid during extraction. Inspection and extrac-

tion of foreign bodies of the hypo-pharynx and mouth of the œsophagus should be practised with a tube spatula (Killian's model). Thin bodies (flat bones and coins) impacted under the border of the cricoid ring are most difficult to extract. Radiography and radioscopy may give negative or erroneous results. Œsophagoscopy enables one to work under ocular control.

GUISEZ (Paris): One of the causes of failure in bronchoscopy is the narrowness of the tube employed. We must beware of radiographs, which afford information badly or not at all of the foreign body's position.

Report on the Surgical Treatment of Frontal Sinusitis; Critical Study of Sequelæ.—**Sieur and Rouvillois** (Val de Grace).—In their report to the Society on the surgical treatment of frontal sinusitis, it has been the special aim of the authors to show that the number and importance of complications ascribable to the surgical treatment of this affection have been singularly exaggerated. In the first chapter they deal with the evolution of frontal sinus surgery, a matter to which French specialists, and particularly Luc, have largely contributed.

In the second chapter cases of the chief complications attributable to the intervention are collected—hemorrhage, orbito-ocular troubles, osteomyelitis, thrombo-phlebitis and septicæmia, meningeal involvement, slight and severe, and cerebral abscess. These various complications, the onset of which in many instances dates back to a period anterior to the operation, develop so much the more readily as they are favoured by predisposing causes. These latter are reviewed in the third chapter. The authors arrange them under two chief headings: (1) Predisposing causes inherent in the subject operated on—age, sex, general health, favourable local conditions. (2) Predisposing causes inherent in the operator. Amongst the first, quite a special importance should be attributed to the general health (chronic infection, syphilis, infectious diseases, etc.), to the anatomical conformation of the diseased sinus, to the extent of the sinusal lesions and the virulence of the infective organisms. A fourth chapter is devoted to the routes of post-operative infection. These are somewhat special on account of the conformation of the sinus and the importance of its relations with other parts. But after having successively reviewed the spread of inflammation by continuity, through venous and lymphatic channels, the authors ascribe the most important *role* to the venous route, as is substantiated in a very decided manner by the most recent anatomical researches and best observed clinical facts. A consideration of the operative procedures, the predisposing and exciting causes of post-operative complications and the discovery of the route usually followed by the infection, quite naturally leads to a search for the proper means of avoiding all complication. These means, according to the authors, lie in a judicious choice of the surgical procedure, in the preparation of the patient, and in the performance of the operation. The most important features of this study, which constitutes the fifth and last chapter, more especially aim at the employment of the endo-nasal method and the practice of trephining by the external route, according as to whether we are confronted with an acute sinusitis, certain pansinusites, or an invading cranial osteomyelitis. The authors finish their subject with the following conclusions: "Let us be perspicacious in making the diagnosis, local and general, and we will undertake interventions proportionate to the subject's resistance and the extent of the lesions. Let us be broad-minded without enslaving ourselves to one systematic procedure, and we will do what is necessary and no more.

Let us be prudent and practised, and we shall avoid the dangers incident to the intervention. Is this to mean that we shall always be free from unfortunate cases? Evidently not, for they will always exist, but they will be rare."

Treatment of Frontal Sinusitis by the Endo-nasal Route.—**Yacher** (Orleans).—*Apr*opos of maxillary sinusitis, the maxillary sinus must be converted into a large accessory cavity of the nose, by freely removing the inner wall of the sinus as far as the floor of the nasal fossa. There are advantages in the method which he employs which greatly relieve, if they do not absolutely cure, patients, who refuse a radical cure by the external route. This statement may be applied to the frontal sinus. All he proposes is, to open freely the approach to the sinus, to curette all that can be reached, and to drain the rest freely. The frontal sinus, whatever may be its dimensions, is thus transformed into an accessory cavity of the nose, communicating with it by a large naso-frontal canal, which allows the introduction of pliable or rigid cannulae of various sizes, rendering lavage easy. This easy and permanent drainage and the irrigations change the state of the sinus mucosa and in time induce a cure, relative if not complete. In all cases this endo-nasal drainage of the frontal sinus must always be a preliminary operation, the first stage before the radical cure by Luc's method or its derivatives. This drainage makes the complications of sinusitis very rare, especially if it be carried out early, before polypoid degeneration has had time to occur. Once drainage has been established the patient himself will be able to wash out his sinus or submit it to currents of alcohol, oxygen or hot air, the well-known desiccating action of which sometimes gives unexpected results. To approach the frontal sinus one must thoroughly enlarge and extensively curette the fronto-nasal canal which gives access to it. One of the most important points is therefore a knowledge of the position of the fronto-nasal canal. To find its situation a horizontal line is drawn tangentially to the eyebrows; another line is drawn vertically from the last through the root of the nose, so as to form two right angles. The fronto-nasal canal is found in the antero-posterior plane passing through the bisector of one of these right angles.

Operative Technique.—First of all the fronto-nasal canal must be attacked. The distance between the summit of the angle and the anterior naris must be very carefully measured, and registered on the probe or cannula. By breaking down the osseous tissue slowly and progressively from below upwards and from before backwards, replacing the burr or curette constantly by the blunt-pointed probe in order to take bearings, one ends by penetrating into the upper part of the fronto-nasal canal, or lowest part of the sinus. The rest of the operation consists in using various curettes, at one or several sittings, according to the local anæsthesia obtained, or the amount of hæmorrhage present. After the curettage, antiseptic and caustic irrigations are employed by the surgeon and the patient once, twice or thrice in twenty-four hours, according to circumstances. To sum up, the radical cure of chronic frontal sinusitis ought invariably to be preceded by free opening of the fronto-nasal canal, followed by antiseptic or caustic lavages of the sinus by the endonasal route. In spite of the difficulties of locating the canal and in its enlargement, this method should precede Luc's operation or its derivatives; the infectious endo-cranial complications will then be much less to be feared, because the walls of the extremely septic cavity in which one is obliged to work are much altered by this preliminary treatment. On the other

hand, the majority of cases of frontal sinusitis will recover under this treatment if we take care to resort to it as soon as the sinusitis has resisted medical treatment.

LUC (Paris): One of the conclusions arising out of the communication is that operation for frontal sinusitis has become a relatively benign one. The experiences of Mahu, Escat and Claoué have demonstrated that total curettage is not indispensable for the cure of polypoid degeneration. It must be observed that Vacher possesses very great skill, enabling him to undertake exceedingly delicate interventions. He agreed with Vacher as to the necessity of a large communication between the nasal antrum and nasal fossa. It seemed to him that Vacher's method would be much more applicable to acute sinusitis.

MOURE (Bordeaux) did not consider it requisite to adopt one stereotyped procedure, but it was always necessary to make sure that the ethmoid was thoroughly cleared out. With Luc, he thought that Vacher's operation was very difficult. One must consider the patient, who may be disfigured, and the skilfulness of the operator must also be taken into account. The patient ought not afterwards to catheterize his frontal sinus too freely. Much has been talked about the necessity in maintaining fronto-nasal drainage, but an operated frontal sinus becomes filled up and exists no longer, therefore drainage is quite useless at an early stage.

JACQUES (Nancy): Post-operative complications fall under two groups—acute (meningitis) and subacute (various complications). A communication exists between the peri-cerebral and nasal lymphatics through the cribriform plate. What course is to be adopted to avoid acute complications? From a technical point of view, keep away from the attachment of the superior turbinated body, which is the dangerous zone as regards operative complications. He considered it very important thoroughly to clear out the ethmoid. One must only think of approaching the superior turbinal when all has been cleared. From a point of expediency we must not operate on sinusitis in the acute stage. Moure's remarks showed that obliteration of the frontal sinus was unnecessary, since it disappeared automatically.

MOURET (Montpellier): Hearing Vacher speak gave one the impression that he was dealing with an operation as simple as paracentesis of the membrana tympani. Puncture of the sinus is a most delicate procedure. Besides, the position of the frontal sinus is very variable.

SIEUR (Val de Grace): Contrary to Vacher, the speaker did not consider it necessary to try to perforate through the fronto-nasal canal, which, from its anatomical position, led directly into the cranium. Vacher certainly does not penetrate through the canal; he perforates a region previously friable, traverses the ethmoid cells, and finally arrives in the sinus; the great objection to the procedure is that one is not aware when the sinus is reached, and using a little more force, one breaks into the cranium. Do what one will, the passage created by Vacher's instrument must be very narrow. On this account the method is, perhaps, useful in some acute cases, but to hold it up as a general method of treatment is to say too much.

MOURE (Bordeaux) said that a patient could not catheterize his sinus himself; but VACHER was certain of this. A patient never left him without washing himself out. The construction of the instruments is such that in operating one keeps away from the cranium.

H. Clayton Fox (Trans.).

Abstracts.

NOSE.

P. Stenger.—On the Technique of the Intra-nasal Operations on the Ethmoidal Labyrinth. "*Zeitschr. f. Ohrenheilk.*," vol. lxiv, Part I.

The anterior end of the middle turbinate is removed in the usual way with scissors and snare, and the bulla ethmoidalis localised and opened through with a Heymann's forceps. It is pointed out that the ethmoidal cell system is bordered by flat, more or less even bony surfaces, the lamina papyracea and the bony boundary of the anterior and middle fossae, and that the walls of the cells are set roughly at right angles to one of these surfaces, and are of such a consistence that they can be nipped through with a cutting instrument. The cell walls afford a suitable hold for a cutting forceps, and if this appears to fail and a smooth bony surface is encountered, the boundary line has probably been reached. No hooks or sharp spoons should ever be employed on account of the danger of fracturing the lamina papyracea or wall of the anterior fossa by tearing and pulling. An illustration of the forceps recommended would have made the paper more useful.

Lindley Sewell.

Coleman, Frank.—Fistula of the Antrum closed by Sliding Bone-Flaps. "*Proc. Roy. Soc. Med.*," December, 1911 (Odontological Section).

The patient was a male, aged twenty-nine. Mr. Coleman ascertained that he had a tooth removed in February, 1911. The extraction had been a difficult one and the root had come away encased in a layer of bone. A watery discharge from the tooth-socket followed and was not relieved by irrigation of the antrum. On September 28 Coleman found an opening into the antrum about the size of a goose-quill in the region of the left second upper molar, and on probing the antral cavity proved to be small. The normal opening was patent and there was no foreign body present in the cavity; fluid syringed through the antrum returned clear. Under general anaesthesia the edges of the fistula were freshened with an antrum perforator, and two chisel-cuts were made into the bone in front of and behind the fistula, while similar cuts were made with bone forceps on the inner and outer sides. The incisions were made sufficiently deep to weaken without detaching the bone. In this way the opening was surrounded by four movable or hinged bone-flaps, which were crushed together by means of the thumb and fingers. The operation was completed by uniting the mucous membrane with silk stitches. One month later the condition was satisfactory.

J. S. Fraser.

Herxheimer, Professor.—The So-called "Hard Papilloma" of the Nose, with Notes of a Case Affecting the Frontal Sinus. "*Zeitschr. f. Laryngol.*," Bd. iv, Heft 3, p. 249.

Nasal papillomata have been divided into two classes—hard and soft. The latter are more common and are covered by cylindrical epithelium; they are really inflammatory hyperplasias. The hard papillomata are cauliflower-like growths covered with squamous epithelium; they are real tumours, and show both connective-tissue and epithelial proliferation. The squamous epithelium covering the tumour is probably due to metaplasia, although the formation of keratin and prickle-cells may occur. Similar metaplasia of cylindrical into squamous epithelium is, of course, observed in ozæna and also in the genital organs in certain conditions.

Herxheimer considers that the cells of this region have the power to develop in either direction, *i. e.* into squamous or into cylindrical cells. From a clinical point of view the hard papillomata appear to be somewhat malignant, though microscopically they seem to be simple tumours; they really occupy a middle place between innocent and malignant growths. Billroth recorded a case in which the tumour existed for eleven years without causing glandular involvement, but out of twenty-four cases collected by Blumenthal seven were malignant. Herxheimer himself has collected thirty-eight cases up to date in almost all of which the tumour was situated on the septum. There are only four cases hitherto described of malignant tumour of the frontal sinus, and in all but one instance the growth has been a sarcoma. The present patient was a woman, aged sixty, who suffered from myxedema and had to take thyroid tablets. For two years she had suffered from a swelling on the forehead over the right eye, and later from symptoms of brain pressure along with double vision and exophthalmos; nasal examination was negative. At the operation a greyish cauliflower-like tumour was exposed protruding from the right frontal sinus. The tumour had destroyed the posterior wall of the sinus completely and a part of the anterior and inferior walls, and had thus broken through into the orbit and displaced the eyeball; it had also invaded the left frontal sinus. Suppuration followed in the wound cavity, and continued till bismuth paste (33 per cent.) was injected. Herxheimer calls the tumour, no doubt with justice, a "cylindrical-celled papillary fibro-epithelioma."

J. S. Fraser.

Karbowsky, B. (Munich).—Bilateral Dilatation of the Frontal Sinus.
"Zeitschr. f. Laryngol.," Bd. iv, Heft 5.

In rare cases dilatation of the frontal sinus may be due to new growths, traumatism, syphilis, etc., but it is usually caused by inflammatory changes in the mucosa with consequent narrowing (or even closure) of the frontal duct; the contents of the dilated sinus may be purulent (pyocele) or mucoid (mucocoele). The process of dilatation is often slow, and may take twenty years; the ethmoidal, and even the sphenoidal sinuses may be involved. Karbowsky records a case of symmetrical dilatation of the frontal sinuses with perforation of the floor. The patient had suffered from nasal discharge for about a year, but for several months the flow had ceased, and the patient had complained of supra-orbital headache. The case was first seen by an oculist, and later by a surgeon, who punctured the swelling and evacuated thick fluid. When observed by Karbowsky the case presented the well-known features of frontal mucocoele. At the operation the fluid proved to be thick, greenish, odourless pus; the ethmoidal regions were not involved. The fluid was sterile. Microscopical examination of the polypoid mucosa showed that in places the epithelium was absent, while in others it was reduced to a layer of flat cells; the submucous tissue was thickened and infiltrated; osteoclasts were not observed in the bone removed.

J. S. Fraser.

LARYNX.

Barach, J. H. (Pittsburg).—Observations on Sound Production and Sound Conduction along the Respiratory Tract. *"Amer. Journ. Med. Sci.,"* October, 1911.

The author called attention in a previous paper to the fact that, owing to the properties of sound transmission possessed by the framework of

the thorax and adjoining bones, tubular breathing is to be detected in the normal subject at the acromial end of the clavicle, and cavernous breathing over the uppermost portion of the spinal column and over the occipital and other bones of the cranium. Discussing the sources of these sounds, he concludes that those heard over the acromial end of the clavicle originate at the manubrium sterni, which receives sound vibrations from the trachea behind it. The cavernous breathing heard over the cranial bones, particularly the occipital, takes origin in the nasal cavity, which acts as a resonator. That the "nasal resonator" is an important factor in the production of the sounds heard on ordinary auscultation of the chest is appreciated on observing the weakening of the breath-sounds which occurs when respiration takes place through the mouth. It should therefore be borne in mind that the larynx is only one of the factors in the production of auscultatory sounds, and that the latter are largely dependent on the condition of the "nasal resonator."

Thomas Guthrie.

Henke, Fritz.—Some Observations upon the Effects of Salvarsan in Syphilis of the Larynx. "Münch. med. Wochens.," August, 1911, p. 1670.

In the treatment of late syphilis (gummata, etc.) of the larynx and trachea, with dyspnoea due to stenosis, marked success has followed the administration of salvarsan in the hands of many, amongst them the author of this article. The two patients, whose cases are briefly recorded, had suffered from dyspnoea and dysphagia, and had been energetically treated by mercury and iodides with little result. Complete healing eventually followed one injection of salvarsan, and it was remarkable that improvement showed itself within twenty-four hours. Similarly favourable results have been recorded by many authors. It is claimed that in these cases salvarsan possesses many advantages over both mercury and the iodides. (1) Its action is rapid; the painful symptoms in particular may be relieved in a few hours; (2) the healing seems not to be followed by secondary stenosis; (3) even already existing cicatricial fibrosis is as a rule greatly lessened if not entirely removed; (4) the injection of "606" is not followed by any appreciable reactionary swelling such as follows the use of iodides. This last claim is important, because on theoretical grounds, based on the reaction of Herxheimer, some writers consider the opposite to be the case. The explanation given in the text is that, besides acting upon the *Spirochæta pallida*, salvarsan destroys very rapidly other spirochætae which are always present in the lesions and which set up a great deal of secondary swelling and inflammation. Any swelling, therefore, which may be due to the reaction of Herxheimer is more than counterbalanced by this dual effect of salvarsan.

J. S. Barr.

Gluck, Th., and Soerensen, J.—Surgical Operations in Cases of Laryngeal Tuberculosis. "Zeitschr. f. Laryngol.," Bd. iv, Heft 3.

Hitherto total extirpation and hemi-laryngectomy have only been performed in malignant disease of the larynx. The authors claim that their technique renders these operations comparatively safe, and therefore suitable for other laryngeal conditions such as tuberculosis. The writers also remind us of their good work in connection with circular resection of the trachea, laryngostomy, and tracheostomy. They are of

opinion that the removal of a larynx which is the seat of active tuberculosis is likely to have a good effect upon the lung condition.

Indications.—(1) The general condition of the patient must be relatively good, and the lung disease must be localised and must not be of an acutely progressive nature. (2) The trachea and the pharynx must be sound. (3) The laryngeal tuberculosis, in spite of general treatment and local endo-laryngeal treatment, is getting worse.

Contra-indications.—Large cavities, bronchiectasis, acute phthisis, hæmoptysis, pneumonia, pleurisy, and bronchitis: in such cases only tracheotomy to relieve dyspnoea should be considered. Operation is also contra-indicated in cases of tuberculosis of the mouth, nose, pharynx, and trachea. Operation should only be undertaken when the whole of the laryngeal disease can be removed. Mild cases of tuberculosis of the mucous membrane without ulceration do not call for radical treatment but are suitable for endo-laryngeal methods: even if cases with ulceration are doing well with endo-laryngeal treatment operation is not called for.

(a) *Tracheotomy*: This is indicated in cases of obstruction. The writers hold that in very advanced cases of pulmonary and laryngeal disease this operation cannot be expected to do much good, but in cases in which the patient's condition is fair and the laryngeal disease not too far advanced the effects are excellent and comparable to those after fixation of a tubercular joint. They recommend upper tracheotomy under local anaesthesia. (b) *Laryngostomy*: The object here is to remove the diseased parts of the interior of the larynx. The results have not come up to expectation, as the wound becomes tubercular and the patient is worse than before. The writers consider this operation suitable only in chronic cases. They remove all diseased tissue right down to the cartilage, and then cover the bare area by means of rectangular flaps of skin from the neck, which they fix in position first by stitches and then by a Mikulicz tampon; the tracheotomy tube is left in position. After this operation the voice is rough and toneless. (c) *Resection and extirpation of the larynx*: Hitherto these operations have received little favour in cases of laryngeal tuberculosis. Chiari says that, apart from the danger of such operations in cases of tuberculosis of the larynx, a cure cannot be expected. The writers, however, state that they have done away with the danger of the operation. They have only had *one death as a result of the operation out of twenty-two cases*, although several patients died later of pulmonary tuberculosis or of tubercular infection of the wound. Their *technique* is as follows: The upper part of the body is raised: deep anaesthesia; preliminary tracheotomy is *not* performed. Larynx exposed by dividing the muscles passing up to the hyoid bone; vessels are now ligatured. Larynx (with the epiglottis attached) is now divided from the hyoid bone and from the pharynx and oesophagus; the wound in the pharynx is stitched up, and then the larynx is divided from the trachea. Finally, the trachea is stitched to the skin at the lower angle of the wound.

Indications for extirpation of larynx.—(1) Deep and extensive ulceration of the mucosa. (2) Perichondritis due to tubercular ulceration along with necrosis of cartilage, abscess-formation and perforation of the covering soft parts. (3) Extensive tumour-like tissue proliferation. (4) Ulceration and infiltration of the upper aperture giving rise to marked odynophagia and loss of nourishment.

The writers state that *partial resection* seldom is called for, but, if performed, the raw surface must be covered with a quadrilateral skin-

flap, which is united to the tracheal mucous membrane below and to that of the pharynx above: the flap is fixed and held in position in the same method as in cases of laryngostomy. The writers give the results of 34 operations (7 tracheotomies, 5 laryngostomies with plastic operation later on, 2 hemi-laryngectomies and 20 total laryngectomies). The result was comparatively successful in three of the seven tracheotomies, and in one of these very good; of the five laryngostomies one did badly (tubercular infection of wound), but the four others were cured, in one case for fourteen years, one eleven years, and one eight years; the two cases of hemi-laryngectomy both recovered (seventeen and nineteen years respectively); of the twenty total laryngectomies one patient died fourteen days after the operation, the other nineteen patients stood the operation well; four completely healed; in three others the result was comparatively successful, while the remaining twelve died within a year after the operation.

J. S. Fraser.

EAR.

Yankauer, Sidney.—**A Speculum for the Direct Examination and Treatment of the Eustachian Tube.** "Annals of Otology, Rhinology and Laryngology," vol. xx, p. 421.

An instrument designed for introduction into the naso-pharynx, and illuminated by the ordinary headlight. It is simple in construction, and appears to be easy of manipulation.

Macleod Yearsley.

Perkins, Chas. E.—**Mastoiditis without Apparent Involvement of the Middle Ear.** "Annals of Otology, Rhinology and Laryngology," vol. xx, p. 423.

Four cases. In all the membrana tympani was intact, and is described as "normal." In the first and second cases there were a subperiosteal collection of pus and perisinus abscesses; the fourth case died from purulent meningitis.

Macleod Yearsley.

J. Møller.—**Clinical Observations on a hitherto undescribed form of Tuberculosis of the Middle Ear.** "Zeitschr. f. Ohrenheilk.," vol. lxiv, Part I.

The writer describes a type of tuberculosis of the middle ear in which the patient complains of a gradually increasing deafness, and in which, on examination, the tympanic membrane presents an appearance somewhat resembling that seen in an acute otitis media with marked exudation into the middle ear. The membrane is markedly bulged, but does not show diffuse reddening; it is golden and dull, showing many injected radial blood-vessels. If paracentesis is performed the membrane is found to be strikingly thickened and tough, and no secretion can be obtained from the middle ear, the membrane heals rapidly, and after remaining for weeks or months in the state described above may gradually regain its normal appearance. Should the process advance, a small portion of the membrane protrudes more and more, its epithelium becoming oedematous and finally shed, and a small ulcer develops with a small drop of pus on its surface. Similar ulcers develop over the rest of the tympanic membrane, which heal or may give rise to perforations, the membrane then presenting the well-known appearance of the typical middle-ear tuberculosis, but frequently the dull golden coloration is preserved for a long time. The condition starts, in fact, as a diffuse generalised infiltration of the membrana propria with marked thickening, and a

microscopical examination reveals a chronic inflammatory process in the membrane with destruction of its tissue, and replacement by new-formed connective tissue showing a tendency to organise. Although no tubercle bacilli can be detected on staining by the Ziehl-Neelsen method, it appears certain that a chronic tuberculous inflammatory change is occurring. This condition has been observed and followed in nineteen cases of phthisis pulmonalis.

The treatment advised consists in non-interference so long as the outer epithelial layer of the membrane is intact: as soon as ulcers develop energetic treatment with trichloroacetic acid or lactic acid, or excision of parts of the membrane followed by cauterising, or where marked loss of substance occurs. Pfannenstill's method of using perhydrol and potassium iodide may be tried.

Lindley Sewell.

Putnam, J. J.—The Value of Lumbar Puncture in the Treatment of Aural Vertigo. "Boston Med. and Surg. Journ.," September 28, 1911, p. 472.

The author refers to the literature of the subject. The best cases for treatment by lumbar puncture are those where tests show the labyrinthine apparatus is still in a fairly normal state, the most favourable being those of pure labyrinthine origin and of relatively short duration. In cases of this class sensitiveness to the galvanic current may be poor before lumbar puncture, may become more nearly normal after. Prognosis as to results varies much, but it is very good where galvanic and other tests indicate a labyrinthine vertigo with but little nerve degeneration. This paper must be read in conjunction with that of Blake in the same issue.

Macleod Yearsley.

Tobey, G. L.—A Case of Primary Sarcoma of the Middle Ear and Mastoid Operation: Recovery. "Boston Med. and Surg. Journ.," November 9, 1911, p. 726.

Boy, aged eleven, in whom attacks of dizziness on rising formed the first symptom. After two weeks these ceased. Three months later hissing tinnitus came on and lasted two weeks. Two days after its cessation, bloody discharge appeared, with no subjective symptoms. A tender mass filled the lumen of the meatus (right ear). Operation (October 24, 1907) showed the mastoid necrosed and occupied by growth, which was removed, practically the whole ear being involved. Examination on October 9, 1911, showed no signs of recurrence.

Macleod Yearsley.

MISCELLANEOUS.

Fischer, Prof. B.—Death from Encephalitis Hæmorrhagica following an Injection of Salvarsan. "Münch. med. Wochens.," August 22, 1911, p. 1803.

This record of a tragic case is of great interest at the present time. The patient was a medical man in the prime of life who accidentally contracted syphilis from a patient. The primary lesion was situated upon the right side of the nasal septum, and during the secondary period, when he was first seen by a doctor, he suffered chiefly from headache and slight pyrexia, accompanied by a maculo-papular eruption with swelling of the glands below the angle of the lower jaw (right). After the dia-

gnosis of syphilis had been confirmed by Wassermann's test, an intra-venous injection of 0.4 gm. salvarsan was carried out with immediate benefit, and a few days later mercurial inunction was begun and continued for thirty applications. A second dose of salvarsan (0.4 gm.) was then administered (forty days after the first), and two and a half days later he was suddenly taken ill with serious cerebral symptoms (drowsiness, delirium, cramp, retraction of the neck, and finally coma deepening into death four days after the second injection). The *post-mortem* examination, macroscopic and microscopic, clearly proved that death was due to encephalitis hæmorrhagica acuta: there was found also a commencing cirrhosis of the liver. A long and careful critical review of the subject follows, and the conclusions arrived at, with which the author ends his article, may be briefly given here: (1) In a certain number (very few) of individuals suffering from syphilis an intra-venous salvarsan injection is followed, either immediately or after an interval of two or three days, by acute oedema of the brain, which may pass off, but which may develop into encephalitis hæmorrhagica ending in death. (2) This is more liable to follow a second dose of salvarsan. (3) A similar complication may follow the treatment of syphilis by mercury. (4) The fact that oedema of the brain and toxic encephalitis occur only, as far as is known, after the use of such a drug *in syphilitic cases*, indicates perhaps that syphilis has a special tendency to bring about certain molecular changes in the substance of the brain predisposing to these lethal effects. (5) It is absolutely essential that, after a salvarsan injection, the patient should in every case be kept under observation for several days, during which complete rest in bed is insisted upon.

[*Note*.—In the same number of the journal two further fatal cases of encephalitis hæmorrhagica following the administration of salvarsan are fully recorded.]

J. S. Barr.

REVIEW.

*Direct Laryngoscopy, Bronchoscopy, and Oesophagoscopy.*¹ By Prof. W. BRÜNNINGS, M.D., University of Jena. (Translated and edited by W. G. HOWARTH, M.C., F.R.C.S.) Pp. 367 + Index, pp. iii. London: Baillière, Tindall & Cox, 1912.

Amongst the many workers who have contributed during the last thirty years to the brilliant achievements in practical endoscopy of the air-passages and upper food-passages the names of Mikulicz, of Gottstein, of Kirstein, of Killian, of H. v. Schrötter, of Guisez and of Chevalier Jackson have stood out pre-eminently, and to this list the name of Brünings (last, but by no means least) must be added on account of his original and valuable contributions during the present century. Although his name has become almost a household word in medical circles all over the world on account of the popularity of his double endoscopic tubes, it is probable that any enduring reputation associated with his name will depend, not on his ingenious double tubes, but rather in spite of them. His numerous anatomical and physiological investigations on the tracheo-bronchial tree, including tracheo-bronchography and tracheo-broncho-

¹ The original edition of this work in German appeared in 1910. This English edition differs considerably from the first German edition, and is actually a second edition issued in English, and in advance of another German edition which is still in the author's hands.

metry, carried out for the most part by methods and instruments of his own design, mark him out as an original worker of the highest ingenuity and imagination. Elaborateness marks his descriptions of the various endoscopic procedures he advocates, each step being described in great detail. Indeed, his work occasionally "suffers from the defects of his qualities." Whilst, for example, one would not wish a paragraph cut down which deals with actual clinical methods, over-elaboration in the descriptions of the construction of instruments and of methods of illumination is apt to become very wearisome. It is true that in this edition the opening section headed "Technique" and dealing mainly with the construction of the author's own instrumental modifications has been cut down from 140 to 56 pages, but for English readers it would have been better if the descriptions of the methods of others had been retained.

Dr. Brünings points out in his preface that the space gained in this way has been devoted to enlarging the sections dealing with the actual carrying out of endoscopy for purposes of diagnosis and treatment. Moreover, "The section dealing with direct operations on the larynx has been completely re-written, and an entirely new chapter on bronchoscopic operations and methods of treatment has been added" (Preface). The editor claims "that an exhaustive and systematic account has been given of the diagnosis and treatment of bronchial foreign bodies," and nothing half so good has ever before appeared on this portion of the subject. The technique of direct operations on the larynx is, however, most inadequately dealt with in rather less than seven pages; and of these, operations causing bleeding, together with the removal of foreign bodies, occupy only a page and a half, while the remaining five pages deal mostly with galvano-cautery puncture and an operation which Brünings calls the "endolaryngeal plastic," and which consists in the injection of "hard paraffin" into the flabby side in cases of hemilaryngoplegia. Of course the numerous instruments employed in direct laryngoscopy, both in diagnosis and treatment, are well described and illustrated, but it is regrettable that Dr. Brünings has largely failed to do himself justice on the clinical side, and has withheld all account of his successes and failures and the conclusions of his considerable experience, which is just what we all want to know about. It must be remembered that direct laryngoscopy as a mere diagnostic procedure is altogether inferior in most cases (with the exception of young children) to indirect laryngoscopy, and its *raison d'être* is essentially in the domain of treatment, so that it is out of all proportion to find twenty-seven pages devoted to the mere description of laryngeal instruments and their use in the diagnosis, while less than seven pages is given up to the purely surgical side of the subject.

Although the clinical aspect of tracheo-bronchoscopy is dealt with from almost every point of view and with great thoroughness and lucidity (in marked contrast to the meagre descriptions of direct endoscopic surgical measures in the larynx, pharynx, and gullet), yet we must not be understood as implying that even here Dr. Brünings' pronouncements on bronchoscopic technique in diagnosis and treatment represent absolutely the last word on the subject. In dealing with metallic foreign bodies in secondary or tertiary bronchi no mention is made, for example, of the plan recently adopted in this country of performing the bronchoscopic operations with the aid of the screen on the X-ray table.

Again, Dr. Brünings devotes over a page to the question of applying aspiration as an aid to the removal of some foreign bodies. He tells us

that he regards aspiration methods as "of but little use," and passes them shortly in review to "show their weakness." He calculates that a pull of only 33 grm. is theoretically possible in a bronchus, and that in practice not even this small amount of energy would come into play. Against these theoretical conclusions we need only refer to a case recently shown before the Section of Laryngology (Royal Society of Medicine) and reported in this JOURNAL (March, 1912), in which two pieces of chestnut were easily removed by suction from the first hyparterial branch of the left bronchus of an infant of thirteen months, after attempts at extraction by forceps and hooks had failed. The section on œsophagoscopy does not differ markedly from that in the first edition, and it will, we hope, be considerably expanded on the clinical side in the next German issue. It would have been of much service if the editor had pointed out in recommending the constant current in the treatment of paresis of the gullet that there was great danger of causing electrolytic cauterisation unless special and highly technical precautions were taken. The application of the faradic wave current is the more usual procedure and quite safe.

Dr. Brünings has not only originated several highly ingenious instruments of unquestionable usefulness, but he has displayed a perfect genius in many instances for improving previously existing instruments and methods. Killian and others had adapted the principle of the Kirstein reflecting head-lamp to the method of proximal illumination by attaching such an apparatus to the handle of the endoscope. Brünings' improved handle-lamp, however, is a masterpiece of ingenuity and practicability, and in brilliance of illumination is immensely superior to any other. His excellent counter-pressure attachment to the endoscopic handle appears to have solved the difficulty of the tendency to shifting of the distal end of the direct laryngoscope during operations. Brünings' direct laryngoscope, tubular in its proximal portion and gutter-shaped distally, is certainly an improvement for diagnostic purposes on the tubes with bevelled ends used by Kirstein and Killian; for actual operating work, however, we note that Brünings employs an open spatula with a hood, a slight modification of Kirstein's hooded spatula. Brünings has not appreciated the advantages of funnel-shaped endoscopes with a wider proximal extremity and with a lateral slot, such as are often employed here, and which admit of binocular vision.

The idea of passing a small funnel-shaped extension tube through a long cylindrical bronchoscope for exploring secondary and tertiary bronchi was due to Killian. The instrument figured on p. 351 is an elaboration of Killian's method—a *long* outer tube, with an inner extension tube manipulated by a spring, but in Brünings' instrument the extension is cylindrical. Following on this achievement Brünings departed from this original principle of extension, for in his set of five double tubes for tracheo-bronchoscopy and œsophagoscopy we find that the outer tubes are not generally long enough to reach the depths of the main bronchi or of the œsophagus, so that the extension principle is not applied, as in Killian's method of extension, merely to reaching an area of decreased lumen, and, in fact, space is lost, as the inner extension tube is the working part of these instruments, the comparatively short outer tube being primarily accessory in order to facilitate introduction, for which purpose it is distally bevelled. We prefer the modified double tubes which have been introduced in this country in which the principle is reversed, the inner tubes being bevel-ended and used only to facilitate introduction, after which they are withdrawn. The springs and grooves

in all these complicated double-tube arrangements are liable unfortunately to get out of order, especially in sterilising, and being of soft metal and not steel, they readily dent if dropped, so that it is found that the extension does not always work at the critical moment. It must be admitted, however, that Brünings' extensible instruments are extremely popular on account of their ease of introduction, and for diagnostic purposes the diminished lumen is less of a drawback than it is in per-endoscopic operative procedures. Brünings' "normal endoscopic outfit" is a veritable "*multum in parvo*," but it should be supplemented by a few single tubes of the Killian and of the elongated funnel type. The author's numerous accessory instruments are, speaking generally, as useful as they are ingenious.

Dr. Brünings has been content to perpetuate in several instances the unsatisfactory nomenclature of his predecessors. Thus the term "electroscope" is much more suggestive of the gold-leaf electroscope of an elementary course of electricity than a handle-lamp. Czernak's "laryngeal autoscope" was an instrument by which the observer could look at his (the observer's) own larynx, but the term "autoscopy" was perversely applied by Kirstein to the direct-vision endoscopic inspection of another person's larynx. "Hypo-pharynx," again, literally means beneath or underneath the pharynx, that is to say, the cervical œsophagus, although Mikulicz, in using the term, really had in mind the lower part of the pharynx, the part which is hidden by the arytenoids and cricoid plate; deep or post-cricoidal pharyngoscopy is not literally suggested by the term "hypo-pharyngoscopy."

One cannot close this review without reference to the general excellence and helpfulness of the illustrations. The many photographs showing the relative positions of the patient, instruments and observer in endoscopic examinations have an accuracy and instructional value which is not always reproduced in the author's *vis-à-vis* diagrams.

Although the book mainly represents the Gospel of Endoscopy according to Dr. Brünings, and makes no claim to be a complete exposition of present-day practice, it is a work which few of the younger laryngologists could have successfully attempted, and it would be difficult to name anyone, with the possible exception of Killian, who could have included in such a work so great an amount of original achievement, not only on the scientific but also on the mechanical and clinical sides.

We must heartily commend the meritorious part played by the editor in persuading Dr. Brünings to assist in making this English edition so great an improvement on the original German one from the clinical point of view. The laborious task of translation has been done so extremely well that it bears only occasional traces of its German origin. Mr. Howarth was no doubt often confronted with difficulties in finding an English equivalent for a German expression which could not be translated literally, and in one conspicuous instance he has taken the bold step of employing an English word in a new, or at all events in an unusual sense: *Einstellung* (opening up, focussing), which he translates "presentation"; perhaps *full exposure* would more obviously, if not quite adequately, convey the author's meaning of clearest and fullest possible endoscopic display. Such expressions as "bronchial foreign-bodies," "acute foreign bodies," etc. (pp. 326, 339) do not look well in print, although they may be tolerated as colloquialisms. Not every English reader will understand that "struma" (pp. 151 and 206) is used in the German sense of goitre. In the description of the inflating œsophagoscope (p. 201) "Spiegelglasscheibe" is incorrectly translated "pane of looking glass."

instead of "disc of plate glass," which is an entirely different contrivance. We have detected a few genuine printer's errors, viz. *pre-oral* for *per-oral*, *deglutatory* for *deglutitory*, and the reference on p. 121 to Fig. 45, which should read Fig. 46, and perhaps *thoractomy* for *thoracotomy* comes under this head.

"Direct Laryngoscopy, Bronchoscopy and Esophagoscopy" is an original, informing, and splendidly turned-out book, which reflects immense credit upon author, translator and publishers. *William Hill.*

THE TEACHING OF OTO-LARYNGOLOGY IN ITALY.

To the Editor of THE JOURNAL OF LARYNGOLOGY, RHINOLOGY AND OTOTOLOGY.

DEAR SIR,—In an article by Prof. Massei, published in the JOURNAL OF LARYNGOLOGY, RHINOLOGY AND OTOTOLOGY, April, 1912, on the conditions of university teaching of Oto-rhino-laryngology in Italy, it is stated that, except in Rome, there exist no other clinics of this speciality with beds. Now, while this is correct as regards Naples and some other universities of the kingdom, it is not true for Turin. In Turin there has been in existence ever since 1895 a university clinic with ten beds under the direction of the undersigned. In order to aid the official clinic the undersigned founded in 1900 a private clinic, which at present contains seventy beds, and which allows him in the most efficacious manner to arrange for the teaching both of students and of doctors. At Genoa, Pavia and Padua also, although a real clinic has not yet been instituted, the Professors Masini, Nicolai and Arslan have the disposal of a number of beds sufficient to serve for their teaching. Although, however, in Italy, as in other countries, Oto-rhino-laryngology has not yet reached the height which is due to its importance in medical studies, the progress made during these last years fills us with confidence that a better future awaits it.

Yours truly,

Prof. Dr. G. GRADENIGO,

Ordinary in the University of Turin.

TURIN;

May 9, 1912.

BOOKS RECEIVED.

- Handbuch der speciellen Chirurgie des Ohres und der Oberen Luftwege.**
Herausgegeben von Drs. L. Katz, H. Preysing, and F. Blumenfeld.
1 Bd., 2 Hälftte, Lief. 6. Würzburg: Verlag von Curt Kabitsch, 1912.
- Die neue Wiener Klinik für Kehlkopf und Nasenkrankheiten.** Von Prof. Dr. Ottokar Chiari und Prof. Dr. Otto Kahler. Berlin and Vienna: Urban und Schwarzenberg, 1912.
- The Skiagraphy of the Accessory Nasal Sinuses.** By A. Logan Turner, M.D., F.R.C.S.E., F.R.S.E., and W. G. Porter, M.B., B.Sc., F.R.C.S.E. Price 10s. 6d. Edinburgh and London: William Green & Sons.

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THE TECHNIQUE OF AUDITORY EXAMINATION IN INFANCY.

By P. MAURICE CONSTANTIN (Marseilles).

Translated by MACLEOD YEARSLEY, F.R.C.S.,¹

Senior Surgeon to the Royal Ear Hospital, Otologist to the London County Council Deaf Schools, Consulting Aural Surgeon to the Royal School for the Deaf and Dumb, Margate, etc.

THE otologist is often consulted as to children of a year, eighteen months, or two years of age, suspected of congenital or acquired deafness, of deaf-mutism, or of merely a diminution of the auditory function. As serious and complete examination as possible is demanded, but the difficulties are great. Most often the child does not speak. How is the examination to be conducted in order to do really useful work?

Literature on the subject is not abundant. Whilst so much has been written on auditory examination methods in the adult, authors, with remarkable unanimity, have almost all abstained from indicating the technique of the auditory examination of children under four years of age.

Stress has been laid upon the means of recognising deafness in very young school-children over four years old, and upon the necessity of forming an otological inspection service for schools;

¹ From the *Bulletins et Mémoires de la Société Française d'Oto-rhino-laryngologie*, 1911.

but no one considers very young children who are already suffering from their ears, the little scholars of to-morrow, in whom the aurist may discover lesions which could have been cured some months or years before.

Beyond some remarks of Politzer and Urbantschitsch on the technique to be employed for the examination of children of tender years, beyond the indications given by Kussmaul, Köllnenter (of Rostock), Rudolphi, Körner, Zimmermann (of Dresden), Köllreuter, and Sooboda, scarcely anything is to be found in otological literature on the subject which interests us in this short study.

Politzer insists on the difficulty of the diagnosis of deafness and deaf-mutism during the first two years. He advises, for the discovery of deafness, clapping of hands, whistling, and sounding a bell, watching the child's expression the while. He recommends the elimination of "all vibrations (?)". For deaf-mutes he suggests the investigation of the auditory capacity for the scale (after the first year of school) by the vibrating tuning-fork held in front of the ear, the eyes being covered, or the use of the accordion of Urbantschitsch. Genzner and Kussmaul also propose loud noises, bells, hand-claps near the ears, etc. Köllnenter has employed a vibrating reed invented by Körner and called a "cricri." Köllreuter examines newborn babies for high sounds with the Galton-Edelmann whistle, for low sounds with the tuning-fork, and watches the movement of the eyes and forehead of the child. Sooboda finds acoustometric methods defective, and advises using the bell during the child's sleep. The relative values of these methods will be seen later.

The majority of deaf-mutes are not born deaf, and the result of researches that have been made is that the number of congenital deaf-mutes is very inferior to that of the deaf-mutes whose dumbness is the result of deafness acquired in extreme youth. It will be convenient, therefore, to be better prepared than usual for examining the hearing of very young children; it is better to treat cases in time, during the first two or three years, when they are, perhaps, susceptible of improvement, if not of cure, and the number of deaf-mutes, always considerable, will be diminished thereby in notable proportion.

It is well worth while to describe the technique employed by Escat in these very difficult examinations. This system, it must be understood, whilst being very satisfactory, only aims at the examination of the auditory function, and ignores, designedly, the examination of the vestibular and psychic functions, the study of

which may be put aside for a time, although it is certainly important.

Technique.—Let it be supposed that the aurist is consulted as to a child of two years old, of sufficient external development, who walked between twelve and fourteen months, with a fairly intelligent face, not too stupid, who shows no marked signs of degeneration, and who only says “papa, mamma,” or even does not say that.

The parents have been the first to note that he does not hear, or that he hears badly, and that despite his two years, does not learn to speak. They ask for a plain answer. *Does the child hear, or is he deaf?*

It must be at once pointed out that the fact of saying “papa, mamma,” is no proof that the child hears, save when it repeats one of these two words respectively when it is spoken in a loud voice, or with greater reason, in the whisper. In that case it may be said that the child hears, especially if one speaks the word in a whisper.¹ But this eventuality is very rare.

Aërial Hearing: Voice Test.—To perform the voice test, the child is called by his name, or by the pet-name used by his parents, from behind, in a loud voice. Then a deep word like “bonbon,” “tonton,” etc., is pronounced, followed by high one, like “sisi,” “titi,” “zizi,” etc. If the child has heard these words spoken in a loud voice, the test is repeated in a whisper, such as is produced by the residual air of the lungs after a deep expiration, as indicated by Hartmann.

Instrumental Examination.—For the instrumental examination three points at least of the auditory field should be investigated successively, according to the principles of the acoumetric method of Quix, viz. (1) The deep *ut*² (128 d. v.); (2) the medium *ut*⁴ (512 d. v.) or *la*³ (435 d. v.); (3) the high *ut*⁶ (2048 d. v.) or *sol*⁶ (3072 d. v.). During this examination the child should be seated sideways on the knees of an assistant or of the mother, the ears uncovered and the hair held back from the temples to avoid the rustling of the hair by the acoumetric instruments, the stoppage of the vibrations of the tuning-fork, and the tactile sensations which may be produced by the contact of the instrument with the hair.

The aurist distracts the child with an object new to him. The photophore (or the mirror of Clar) has here a new and unexpected application. It is held in front of the child, in the left hand, and flashed and darkened alternately in a way to draw the little patient's attention.

¹ Precautions must be taken that the child does not lip-read.—TRANS.

The deep *ut*² tuning-fork is used, furnished with Gradenigo's index, its vibrating prongs being approached first to the ear opposite to the observer, then to the other ear, the prongs being placed about 2 cm. from the pinna to avoid rustling the ear or the hair. The fork is first made to vibrate with the minimum amplitude indicated by the Gradenigo index, and the test is repeated with successive amplitudes up to the maximum. If the child turns to the side of the tuning-fork as soon as it comes near him, *he hears*.

The tests are repeated several times for each ear for the sake of greater accuracy. It is necessary to avoid approaching the tuning-fork to the meatus and the employment of deeper forks, whose vibrations are perceived tactilely and not auditively. Köllreuter has shown, moreover, that the healthy ear of the child remains insensitive to deep sounds, and Marage has explained how certain deaf-mutes hear, on the contrary, deep sounds much better than high ones. It is therefore considered that the use of tuning-forks deeper than *ut*² exposes the experimenter to serious errors.

A new series of tests is then performed with the high *ut*⁶ fork of Lucae, or the *sol*⁶ (G⁴) of Quix, provided with a percussive hammer. The instrument should always be held behind the child, so that he does not see it coming. The *la*³, vibrated at different phases, can then be used.

If it is wished, the hearing of the child can be examined with a tuning-fork *la*³ *à bouche*, to which the end of a long rubber tube has been fixed, or the bellows of a thermo-cautery. The child is then placed opposite the aurist, who blows into the tube in front of the child, who is attracted by his gestures. He may also again use Clar's mirror and press the ball of the bellows with his free hand or with the foot.

The extremity of the tube supplied to the tuning-fork is fixed behind the child's head, either to the wall, or to the back of the chair, or to some other object. The child is moved a little so that the instrument may be nearer to one ear at first and then to the other. *The child turns to see whence the sound comes.*

The Galton-Edelmann whistle or a simple whistle may be used in like manner. A musical box placed behind the child, a phonograph, in the trumpet of which a cloth is pushed, more or less, to diminish at will the intensity of the sound, can also be used successfully. Escat also proposes the use of a kind of hydraulic whistle, commonly called a "rossignol" (nightingale), composed of a small receptacle in the form of a pitcher containing water, a

plaything much appreciated by children in certain quarters, and which produces fairly pleasant high sounds, recalling somewhat the song of the nightingale. There is also the "crieri" of Körner, a kind of vibrant reed, etc.

During these tests the child's expression is observed very attentively, and more particularly the rotation of the head or merely the deviation of the eyes to the more stimulated side, or the astonishment betrayed by a maximum separation of the eyelids, or the pleased smile which is manifested at the appearance of the sound.

The most precise sign is evidently the rotation of the head to the side of the sonorous source, since it has been indicated in Germany for the diagnosis of simulation. As to facial expression, its value is disputed by Zimmermann; certain children can only show a change of expression for sounds which are disagreeable or agreeable to them, and remain insensible to other sounds which they can perceive perfectly. But this objection is only applicable to very young children, to the newborn sucklings on whom Zimmermann made his experiments, and of whom some were only twenty-four hours old. The newborn baby has, in fact, a very obtuse auditory sense (Rudolphi). The cavities of his middle ear are full of an organised mucons tissue, recalling myxomatous tissue, described by Von Tröltsch, Moldenhauer and Virchow, which still persists some weeks after birth. Köllmeier, with Körner's "crieri," was thus able to demonstrate that no newborn child reacted during the first twenty-four hours of life, and that 74 per cent. only reacted at the end of from two to fourteen days.

Bone-conduction: Watch Test.—Escat describes in his "Technique Oto-Rhino-Laryngologique" (p. 181) how to proceed to examine the child by the watch: "In the child, acoumetry by the ordinary watch is never practicable; the young patient, in fact, answers anyhow, often affirmatively, to put the quickest possible end to the examination. There is a way of obviating these difficulties; in default of a stop-watch, recourse can be had to two watches alternately, one going and one not going, substituting one for the other unknown to the subject. One can appreciate his sincerity, and in many cases arrive, with a little patience, at a decision as to the degree of the auditory acuity."

In the child who does not speak, the eyes should be watched. It is seen if they deviate to the side of the ticking watch. But this behaviour only happens in very wary children, and is rather the exception than the rule. It requires a rare patience on the part of the aurist.

The examination of the cranial perception with a low tuning-fork must be neglected, for the scisesthesic or sismesthesic sensation, apart from the auditory sensation, may rouse the child's astonishment. One ought not to use for this test tuning-forks lower than ut^3 (256 d.v.); La^3 (435 d.v.), or ut^4 (512 d.v.), suit quite well enough. Gellé has made experiments on the cranial perception of the monkey, which provoked, it seems, most comic reactions.

As in the case of the watch, two tuning-forks can be employed, one placed on each mastoid process. Only one vibrates. The child should turn his glance to the side of the vibrating fork. The experiment is made on each ear.

Clapping the hands behind the child, stamping on the floor and the noise of doors violently slammed should be regarded as bad methods, for the child can perceive the vibrations thus produced by the sismesthesic sense alone, turns itself towards the source of the noise, and the observer will mistake a tactile phenomenon for an auditory sensation, a concussion which has not the slightest musical significance in the child examined.

Results.—Thanks to the various tests practised as suggested, it will be possible to appreciate, although only very approximately, *if the child hears very well, if he hears well* (but without being able to fix the acoumetric degree), or *if he does not hear anything*.

This is little, but it is, nevertheless, much if one considers the immense services which the facts thus obtained can render, and if the appreciable number of children are considered in whom the advent of a disastrous infirmity can, perhaps, be avoided.

The attention of aurists cannot be too much drawn to the necessity of practising with more method than heretofore the auditory examination of children of tender years, and no better technique can be recommended than that of Escat, a technique which is, moreover, capable of perfection and modification according to circumstances, and which, without being perfect, gives results quite sufficient for the needs of everyday practice.

CASE OF CONGENITAL OCCLUSION OF THE RIGHT POSTERIOR NARIS BY A BONY PLATE.

BY H. BELL TAWSE, M.B., CH.B. ABERD., F.R.C.S. ENG.

H. W.—, a perfectly healthy man, aged thirty, consulted me in October, 1910. The right side of his nose had been completely blocked ever since he could remember, and for the past few years he had been considerably annoyed by a constant dripping of watery fluid from the nostril.

On looking into the right side my attention was immediately drawn to the pale bluish tint, and to the sodden condition of the mucous membrane—a striking contrast to the healthy appearance of the left side of the nose. Everywhere abundance of mucus was evident, and attempts to mop it up seemed almost to stimulate the glands to produce more. Only the anterior third of the cavity could be seen owing to a deviation of the septum, which was jammed against the inferior turbinate, and almost completely hid the middle turbinal, even after the shrinkage of cocaine and adrenalin.

Bony obstruction in the posterior choana was readily diagnosed on the introduction of a probe, but I was surprised to find that even a fine probe failed to detect any aperture leading to the naso-pharynx, nor could the tip of the probe be seen with the post-nasal mirror. He was anxious to have the obstruction removed on account of the constant dripping of mucus.

On November 11, 1910, under the local anaesthesia induced by cocaine and adrenalin I did a submucous resection of the septum and removed the large and cystic middle turbinal. Up to this stage no difficulty was encountered, and I proceeded to try and make an opening through the bony plate which occluded the posterior choana. With a long chisel and a hammer I attacked the bone, but it was soon apparent to me that the thickness and density of it was to render the task a far from easy one. After repeated attempts I laid aside the chisel and used a sharp-pointed antral burr, and ultimately I was successful in making a puncture towards the septal side, and what I afterwards found was the thinner side of the plate. With bigger burrs I enlarged the opening, but as it was still too small I again used the chisel and chipped away the outer wall of the aperture—a difficult matter, as the bone was a quarter of an inch thick and of ivory hardness. Ultimately a hole large enough to admit the tip of the index

finger was made, but strange to say on passing a finger into the naso-pharynx I discovered that I had failed to perforate the mucous membrane covering the posterior surface of the plate so that the nose was still blocked. The aperture was completed by tearing through the mucons membrane with a conchotome. By this time hæmorrhage was profuse, and it was quite impossible to enlarge the aperture further as I should have liked, but I was hopeful that it might suffice. The cavity was carefully and firmly plugged with gauze, which remained in for twenty-four hours.

The patient made an uninterrupted recovery and left the nursing home ten days later. Three weeks from the date of the operation he had a severe hæmorrhage which made him faint and necessitated his staying in bed a week.

Six months later he was in perfect health, the mucons membrane had assumed its normal appearance, the excessive secretion of mucus had ceased, and nasal respiration was completely established.

Complete occlusion of the posterior naris is a very rare condition, and to have it complicated by a markedly deviated septum is still rarer. Had I to deal with a similar case again I should operate on the septum and middle turbinal first, and after an interval of six weeks I should break down the barrier. The hæmorrhage during the latter half of the operation was so troublesome that direct inspection of the bony plate became impossible and accurate work ceased. Anæsthesia was very good throughout, and the only discomfort complained of was when a finger was passed into the naso-pharynx to complete the enlargement of the aperture. The bony plate was $\frac{1}{4}$ in. thick at its outer edge, and its denseness was such that all the ordinary nasal cutting and biting forceps were useless.

REPORTS FOR THE YEARS 1910 AND 1911 FROM THE EAR AND THROAT DEPARTMENT OF THE ROYAL INFIRMARY, EDINBURGH.

Under the charge of A. LOGAN TURNER, M.D., F.R.C.S.E., F.R.S.E.

STATISTICAL TABLES.

BY DRs. RAYMOND VÉREL, F.R.C.S.E., AND J. MILNE DICKIE, M.B.,
Clinical Assistants.

AFFECTIONS OF THE NOSE.

	1910. (1470)	1911. (1651).
<i>I. The External Nose.</i>		
Deformities	0	7
Injuries	5	11
Collapse of alæ nasi	0	11
Abscess of vestibule	5	4
Dermatitis of vestibule	42	68
Herpes of vestibule	0	1
Lupus	2	6
Gumma	2	1
Nævus	0	1
Sebaceous adenoma	3	3
Papilloma	0	1
	59	114
<i>II. The Nasal Cavities.</i>		
Deflection of septum to right	103	219
Deflection of septum to left	130	164
Irregular deflections	32	61
Hæmatoma of septum	1	4
Abscess of septum	1	2
Perforations of septum	8	19
Bleeding polypus of septum	2	1
Ulcer of septum	0	2
Acute, subacute, and chronic rhinitis	494	320
Inferior turbinal enlargement	300	426
Polypoid middle turbinals and nasal polypi	111	89
Middle turbinal cyst	0	1
Purulent rhinitis	9	13
Atrophic rhinitis (non-fætid)	24	54
Atrophic rhinitis (fætid)	49	32
Rhinitis sicca	28	17
Epistaxis	24	31
Lupus of mucous membrane	10	10
Tubercular ulceration	4	0
Syphilitic disease (tertiary)	15	23
Retention cyst of floor of nose	1	0
Malignant disease	2	1
Foreign bodies	7	9
Nasal neurosis (including asthma)	56	48
	1411	1537

ACCESSORY NASAL SINUSES.	(83)	(86)
Acute antral catarrh	3	1
Acute antral suppuration	0	4
Chronic antral suppuration	34	35
Naso-antral (choanal) polyp	9	8
Acute frontal sinus catarrh	5	7
Acute frontal sinus suppuration	0	1
Chronic frontal sinus suppuration	2	3
Chronic ethmoidal sinus suppuration	5	1
Chronic fronto-maxillary suppuration	5	2
Chronic frontal, ethmoidal, and antral suppuration	5	5
Chronic fronto-ethmoidal suppuration	1	0
Chronic ethmoidal and antral suppuration	2	1
Chronic antral, ethmoidal, and sphenoidal suppuration	0	1
Pansinusitis	4	4
Dental cyst invading antrum	3	6
Orbital abscess	1	1
Syphilitic disease of superior maxilla	1	0
Syphilitic disease of frontal bone	0	1
Malignant disease of antrum	2	5
Malignant disease of ethmoid and antrum	1	0
	83	86

DISEASES OF THE NASO-PHARYNX, PHARYNX AND FAUCES.

	(1516)	(1525)
Adenoids and enlarged tonsils	1174	1206
Enlarged Eustachian cushions	2	0
Ulceration of naso-pharynx	1	0
Syphilitic ulceration of naso-pharynx	0	1
Fibrous tumour of naso-pharynx	0	2
Malignant disease of naso-pharynx	3	1
Stenosis of naso-pharynx	1	0
Acute tonsillitis	56	40
Peritonsillar abscess	19	42
Retro-pharyngeal abscess (acute)	2	4
Vincent's angina	0	1
Diphtheria	3	3
Angina ulcerosa benigna	3	3
Acute catarrhal pharyngitis	23	23
Œdematous pharyngitis	1	2
Acute inflammation of lingual tonsil	1	0
Ludovic's angina	1	0
Chronic pharyngitis, including granular pharyngitis	100	55
Pharyngitis sicca	33	29
Keratosis pharyngis	1	2
Elongated and bifid uvula	3	10
Hypertrophy of lingual tonsil	10	8
Lupus	2	2

Tuberculosis	1	1
Syphilis (secondary)	11	17
Syphilis (tertiary)	21	27
Papilloma of uvula	1	1
Cyst of tonsil	0	1
Varix of soft palate	0	1
Pemphigus of palate	0	1
Malignant disease (epithelioma)	15	12
Foreign bodies	6	6
Paralysis of soft palate	3	1
Sensory neuroses	19	23
	<hr/>	<hr/>
	1516	1525

AFFECTIONS OF THE BUCCAL CAVITY.

	(19)	(17)
Cleft palate	4	7
Injury to palate	0	1
Acute glossitis	3	1
Stomatitis	3	2
Simple ulcer of tongue	1	1
Tubercular ulcer of tongue	1	0
Tertiary syphilis of tongue	1	0
Pyorrhœa alveolaris	2	3
Malignant disease of tongue	2	0
Malignant disease of floor of mouth	2	0
Leucoplakia of tongue	0	2
	<hr/>	<hr/>
	19	17

AFFECTIONS OF THE LARYNX AND TRACHEA.

	(217)	(190)
<i>I. Acute.</i>		
Acute catarrhal laryngitis	19	31
Acute œdematous laryngitis	4	3
Acute syphilitic laryngitis (secondary)	0	2
Acute perichondritis (thyroid)	1	2
Acute perichondritis (arytænoid)	1	0
	<hr/>	<hr/>
	25	38
<i>II. Chronic.</i>		
Chronic catarrhal laryngitis	41	25
Laryngitis sicca	10	17
Vocal nodules	8	4
Pachydermia	3	7
Lupus	2	1
Tubercular disease	38	25
Syphilitic disease (tertiary)	12	16
	<hr/>	<hr/>
	114	95

Simple:	III. <i>Tumours.</i>			
Papilloma	7	.	5	
Fibroma	0	.	1	
Angelioma	0	.	1	
Subglottic cyst	0	.	1	
Malignant:				
Epithelioma—				
Intrinsic	3	.	0	
Extrinsic	6	.	5	
	16		13	

IV. *Affections of the Nerves.*

Functional aphonia	21	.	15	
Laryngismus stridulus	2	.	0	
Abductor paralysis (left)	5	.	9	
Abductor paralysis (bilateral)	1	.	1	
Complete recurrent paralysis (right)	1	.	2	
Complete recurrent paralysis (left)	6	.	4	
Complete recurrent paralysis (bilateral)	0	.	1	
Spasmodic cough	3	.	0	
Sensory laryngeal neurosis	8	.	1	
	47		33	

V. *Miscellaneous.*

Injury to epiglottis	1	.	0	
Stenosis (cause unknown)	1	.	0	
Congenital laryngeal stridor	0	.	3	
Goitre	11	.	5	
Tubercular disease of trachea	1	.	0	
Gumma of trachea	1	.	0	
Foreign body right bronchus	0	.	3	
	15		11	

AFFECTIONS OF HYPOPHARYNX AND ŒSOPHAGUS.

	(11)	(13)
Ulceration of unknown origin	0	1
Hæmorrhage from œsophagus	1	0
Stricture:		
Syphilitic	1	1
Malignant	5	8
Neurosis	4	2
Foreign body	0	1
	11	13

AFFECTIONS OF THE EAR. (2149) (1991)

I. *The External Ear.*

Congenital malformations	2	.	1	
Abscess of lobule	1	.	0	
Sebaceous cyst of lobule	4	.	4	

Herpes of auricle	1	3
Rodent ulcer	1	1
Perichondritis	1	0
Cerumen	303	257
Furunculosis	42	48
Myringitis	0	1
Otitis externa diffusa	47	73
Otomycosis	0	1
Hyperostosis	4	4
Foreign bodies	4	5
Injury to meatus	2	3
Malignant disease	1	1
Aural neuralgia	8	1
	<hr/> 421	<hr/> 403

II. *The Middle-ear Cleft.*

Traumatic rupture of the tympanic membrane	3	0
Eustachian obstruction :		
Right	57	53
Left	74	81
Bilateral	324	306
Acute non-suppurative otitis media :		
Right	18	41
Left	26	32
Bilateral	16	32
Chronic non-suppurative otitis media :		
Right	34	7
Left	33	11
Bilateral	133	86
Acute suppurative otitis media :		
Right	57	31
Left	49	29
Bilateral	15	16
Acute suppurative otitis media with mastoid complication :		
Right	16	25
Left	14	22
Chronic suppurative otitis media :		
Right	129	139
Left	150	124
Bilateral	103	111
Chronic suppurative otitis media with mastoid complication :		
Right	23	19
Left	34	10
Tubercular otitis media :		
Right	6	11
Left	3	3
Bilateral	2	2
Sequelæ of chronic middle-ear suppuration :		
Right	92	89
Left	75	92
Bilateral	73	58

Intra-cranial complications of suppurative otitis media :

Extra-dural abscess	0	2
Extra-dural abscess and temporo-sphenoidal abscess	0	1
Temporo-sphenoidal abscess	0	1
Cerebellar abscess	1	1
Sigmoid sinus thrombosis	3	4
Thrombosis of jugular bulb and vein	1	0
Purulent meningitis	6	4
Tubercular meningitis	1	1
Otosclerosis	17	23
Mixed middle- and inner-ear deafness (non-suppurative)	47	51
	<hr/> 1635	<hr/> 1508

III. *The Internal Ear.*

Internal ear affections :

Congenital	7	1
Traumatic	4	6
Occupational	8	5
Labyrinthine suppuration	7	2
Cerebro-spinal meningitis	3	0
Influenza	2	1
Mumps	1	0
Enteric	1	0
Scarlet fever	0	4
Measles	0	1
Diphtheria	0	1
Pneumonia	1	1
Tabes	2	0
Disseminated sclerosis	0	1
Tumour of base of brain	0	2
Congenital syphilis	12	6
Acquired syphilis	0	3
Tubercle	0	3
Ménière's symptom-complex	1	0
Senile changes	5	11
Unknown causes	39	32
	<hr/> 93	<hr/> 80

MISCELLANEOUS CASES. (240). (300).

(These include cases sent from other wards in the hospital with negative findings, enlarged cervical glands, skin diseases, headaches of obscure origin, mental defects, eye cases, carious teeth, etc.)

TABLE OF OPERATIONS.

The Nose.

Setting nasal fractures	3	0
Paraffin	1	4
Abscess and cysts of vestibule and septum	2	4

Septal spurs	2	2
Submucous resection	34	91
Synechia	1	0
Foreign body	1	4
Curetting for lupus	8	11
Sequestrum	1	0
Turbinectomy	104	80
Nasal polypi	145	126
	<hr/>	<hr/>
	302	322

The Accessory Sinuses.

Proof puncture of antrum	86	118
Antrum :		
Intra-nasal	14	3
Alveolar	1	0
Radical, including naso-antral polypi	23	44
Frontal :		
Radical	8	11
Ethmoid curetting	3	2
Sphenoid sinus	1	1
Dental cyst	3	1
	<hr/>	<hr/>
	139	180

The Pharynx.

Adenoids and tonsils	902	1333
Enucleation of tonsils	63	239
Peritonsillar abscess	19	22
Retropharyngeal abscess	2	3
Scraping lupus	1	1
Removal of lingual tonsil	0	4
Naso-pharyngeal tumour	0	2
	<hr/>	<hr/>
	987	1604

The Larynx, Trachea, and Esophagus.

Tracheotomy	3	9
Thyrotomy	2	0
Tracheostomy	0	1
Foreign body from bronchus	0	1
Removal of laryngeal papilloma	0	7
	<hr/>	<hr/>
	5	18

The Ear.

Furunculosis	11	9
Paracentesis	15	34
Eustachian tube curetting	1	0
Acute mastoiditis (Schwartze)	32	33
Aural polypi	85	52
Modified radical	7	7

Radical mastoid	58	70
Labyrinth operation	7	2
Opening sigmoid sinus	3	4
Jugular bulb operation	1	0
Jugular ligature	3	3
Cerebellum explored	1	1
Temporo-sphenoidal abscess	0	2
Extra-dural abscess	0	2
Drainage of meninges (meningitis)	0	1
	<hr/> 224	<hr/> 220

ANÆSTHETICS.

Local anaesthesia	101	678
Ethyl chloride	912	1392
Chloroform	132	160
Ether	112	135
	<hr/> 1257	<hr/> 2365

New patients during 1910 = 3384.

New patients during 1911 = 3512.

SOCIETIES' PROCEEDINGS.

ROYAL SOCIETY OF MEDICINE.—OTOLOGICAL SECTION.

March 15, 1912.

DR. W. MILLIGAN, *President, in the Chair.*

Abridged Report.

Discussion on the Value and Significance of Hearing Tests.

INTRODUCTORY PAPERS.

I. Thomas Barr, M.D., dealt with the tests determining the bone-conduction and its relation to air-conduction. The conducting structures, he thought, should be held to extend as far as the cochlear nerve terminals. Intra-labyrinthine disease does not necessarily involve the nerve apparatus.

Discussing the limitations and difficulties of the hearing tests, Dr. Barr referred first of all to the limitation to their usefulness imposed by age. According to his records bone-conduction predominates over air-conduction in about twice as many patients under thirty as over fifty. Weber's test, however, is reliable in elderly people.

Weber's test.—Allusion was made to conditions in which the Weber's test and the Rinne test did not concur; this the speaker had found in middle-ear exudation without perforation, and in cases of cerumen. If the sound in Weber's test is lateralised to the less affected ear, and yet the Rinne test is negative in that ear, the speaker accepted the Weber as the more reliable.

In *Rinne's test* he employs two tuning-forks (C 128 v.s. and C 256 v.s.), and lays stress upon a shortened positive result. A prolonged negative Rinne with the higher fork increases the likelihood of an affection of conduction; a prolonged positive Rinne with the lower fork increases the likelihood of a nerve affection. Both Rinne and Weber are unsuitable in purely unilateral cases, because the bone-conduction on the healthy side cannot be excluded. He commended Lucæ's remark that Rinne's test is only reliable when the hearing for the whisper has decreased to one metre. A positive Rinne when other phenomena would lead us to expect a negative result, is, he believed, due to nerve impairment co-existing with disease of the conducting structures.

Turning to Bárány's new tuning-fork tests, Dr. Barr said that sometimes when Rinne's and Weber's tests are at variance, Bárány's test is negative, thus supporting the Weber test and pointing to predominant disease in the conducting media.

In conclusion, the speaker suggested that a reliable and simple formula for recording the results of these tests was still a desideratum. That presented by the International Otological Congress at Budapest did not possess the merit of simplicity.

II. Sydney Scott, M.S., after a summary of the physics of sound, passed on to a description of the theory of the action of sound-waves upon the end-organ of hearing. The mechanism of the sound stimulus consists of the reaction of Corti's cells to variations in stress, which are communicated to the fibrillæ of the hair-cells through the perilymph, endolymph, membrana tectoria and supporting membrane. It is claimed that the physical stress acting through both fenestræ (ovalis and rotunda) must affect the whole of the organ of Corti equally, but it is quite possible that certain portions are physiologically more sensitive to some particular "stress-complex" than to others. The variations in stress accord with variations in the frequency and form of sound-waves. One of the great difficulties in the way of this theory is the occurrence of gaps in the auditory field.

The quality of "loudness" in the conscious appreciation of sound is not wholly due to the energy of the sound-wave, but, as Weber's and Fechner's physiological laws and Wundt's hypothesis show, the sensation of "loudness" is one for psychological rather than simple physical and physiological determination.

In order to map out the auditory field accurately, sound generators, which produce pure simple tones as opposed to composite sounds, are necessary. For the lower limit, tuning-forks with inertia clamps, such as those made by Edelmann, are suitable. For the higher, Mr. Scott employs a series of brass tubes clamped by their middle to a frame, the pitch of the sound depending upon the length of the tube. A brass tube, 168 cm. in length, emits a tone of approximately 1024 d.v. per second, the production of harmonics being avoided by careful stroking. A tube of 84 cm. emits a tone corresponding to C⁴ (2048) d.v. and so on. The tone is produced by stroking the outer third of one end of the tube with the finger and thumb enclosed in a wash-leather glove moistened with turpentine mixed with powdered resin. The highest tones audible when these tubes are employed are about 18,000 d.v. per second. Other instruments devised for the same purpose are Schultze's and van Struycken's monochords, and a similar instrument made by Messrs. J. J. Griffin.

The results obtained in delimiting the upper ranges of the tone-field by these instruments differ markedly from those obtained in using the Edelmann-Galton whistle. The whistle gives apparent higher readings, but a charted curve representing its results shows considerable irregularity as compared with the even lines of the others. The probable reason for the imperfection of the Edelmann-Galton whistle is that its sounds are a mixture of several shrill tones, of which the loudest is not always the highest.

In comparing by means of tuning-forks air-conduction with bone-conduction (Rinne's test), it is frequently said that "bone-conduction appears to diminish as we ascend the scale." This is explained by the varying physical properties of the forks themselves and is not a physiological fact, for the use of the monochord shows that true bone-conduction (in health) is equal to, or better than, air-conduction, even for tones of over 16,000 d.v. per second. The sound transmitted by the stem of a tuning-fork in contact with the skull is not "conducted through the fork from the limbs," but depends upon the position of the nodal points at the base of each limb. In low-pitch forks these nodal points are further apart than in high-pitch forks.

In Schwabach's test Mr. Scott believes that it is impossible to avoid bilateral stimulation even when noise-generators are employed.

Referring to the Weber test, the speaker drew attention to cases of unilateral middle-ear disease associated with the lateralisation of the sound to the normal side. The explanation of this result as being due to "nerve degeneration" from disease in the affected ear he did not accept as probable, especially when the activity of the vestibular functions of the labyrinth persists. On the other hand, he suggested, as a point worthy of consideration, that in cases of bony ankylosis of the stapes coupled with complete obliteration of the round window the sound from the vertex might produce a stronger stimulus in the normal ear.

Respecting the problem of tone-gaps and tone-islands in the auditory fields, the speaker felt rather disposed to question whether the instruments by which these phenomena were elicited were quite reliable and free from error. He had a number of such cases under observation, but thought the subject in need of re-investigation by means of additional monochords and resonators.

Mr. Scott illustrated his remarks with a rich and interesting collection of cases, expository diagrams, and charts.

The President, in thanking the introducers for their papers, supported Dr. Barr's suggestion that the Section should endeavour to standardise their methods of recording hearing tests.

Mr. Scott also exhibited a wax-plate reconstruction model of cholesteatoma of the middle ear displacing the facial nerve forward and flattening it out.¹

Dr. DUNDAS GRANT said that in Mr. Sydney Scott's laborious and thoughtful work he made use of the charts originally devised by Hartmann, which were troublesome to calculate out in the case of each patient. He (Dr. Grant) had published what he called a "rapid method" of taking these charts. With a series of tests with nine forks for the two ears it did not occupy more than about twenty minutes. It was important to remember that tuning-fork vibrations did not die down arithmetically, but geometrically. So that what we obtained by the tests was simply the percentage duration of hearing

¹ We hope to publish a photograph of this model in a later issue.—ED.

power, not the actual percentage of hearing power itself. To get that percentage of hearing power, if one went simply on the physical basis, calculating the dying down of the tuning-fork, one got very different results. In fact, the tables gave in most cases a very much higher percentage of hearing power than the patient actually possessed. One had to remember, however, that one was dealing with something more than a physical element. Mr. Scott pointed out that a very large psychical element came in which had not yet been calculated out. If one took a tuning-fork and listened to it dying away, he did not think it possible to make the appreciation of such dying away agree with the physical curve. Probably the reason was that according to Flexner's law the gradual decrease was so attenuated that it could not be detected. He thought that in order to be perceptible there must be a certain percentage of difference; if it occurred in jumps the tuning-fork vibrations dying away would be detectable. Although the percentage duration was not an exact representation of the hearing power, it was so valuable clinically that for the present it would be foolish to throw it aside because it did not answer the theoretical standard. With regard to bone-conduction, an ingenious explanation had been offered by von Brünings, who said that in the normal hearing by bone-conduction there was a combination of two methods of conduction—*i. e.* vibrations were conveyed through the bone directly to the labyrinth, but also through the conducting apparatus. That is, the air in the meatus and middle ear was set in vibration at the same time. But it would be known from acoustics that when sound was conducted in two series of waves so that the heights and hollows of the vibration curves did not correspond, there was "interference" and the sound was deadened. That took place in bone-conduction, and therefore bone-conduction was not as good as air-conduction. In obstructive deafness when the tympanic arrangement was not working this interfering element was eliminated, and therefore one found the bone-conduction, as tested otologically, actually greater in the patient than it was in the observer. Mr. Scott's explanation of the reflection of the waves was an obvious one, and he did not doubt that, however ingenious the other was, this reflection was a very large element in the case. It was an extension of Mach's original view that the vibrations were prevented from escaping. Many years ago he (Dr. Grant) observed that in a number of cases of simple ceruminous occlusion, where there was much deafness, the bone-conduction was not increased as it was in a case of obstructive deafness arising from fixation of the tympanic apparatus. He thought it was a fair deduction that in order to get increased bone-conduction something more was required than mere closure of the meatus; one wanted elimination of the air-conducting apparatus—even for vibrations conveyed to that ear from the bone, and probably increase of tension. With regard to Rinne's test, it was a very strange thing that in but few of the text-books was it laid down that a "negative" Rinne occurred in unilateral nerve-deafness. Each of the introducers of the discussion had referred to it, and he hoped it would be more recognised. In the *Proceedings of the Otological Society* he had himself published some diagrams illustrating the conveyance of sound to the labyrinth by bone-conduction in which that was particularly dwelt upon. He christened it a "paradoxical negative Rinne." There was a point in Dr. Barr's paper with regard to positive Rinne which he had not been quite able to grasp. He saw no reason why the existence of nerve-deafness as such should make the Rinne test positive. It was not the existence of nerve-deafness which made it positive, it was the absence of obstructive deafness. And

Dr. Barr mentioned cases of Rinne becoming positive from negative as an evidence that nerve-deafness had supervened. If that took place he would look upon it as a proof that the obstructive element in the deafness had disappeared. Another way of putting it was that the positive Rinne simply proved the absence of any such obstructive disease as would cause deafness. If deafness were present it must be accounted for in some other way than by obstructive disease, in fact, by some form of nerve-deafness. One knew it was limited for practical purposes to the middle forks. The middle forks were those in which the logarithmic curve of decrement was most marked; and it was possible to have a sudden fall in vibrations of the tuning-fork in the passage from the mastoid to the meatus, and thereby get a negative Rinne accidentally. He wished to mention a test which had been devised to find out whether a patient was conscious of hearing best in the midst of a noise. It was the outcome of the work of Sturm.¹ The watch was put opposite the meatus, and drawn away until the patient no longer heard it, and then the vibrating tuning-fork was placed on the mastoid. In cases of what might be called latent paracusis the watch was again heard by the patient at the distance at which it was not heard before. He had tested it in several cases and found it answer.

MR. MACLEOD YEARSLEY remarked that Dr. Dundas Grant had referred to the non-increase of bone-conduction in simple deafness from accumulations in the auditory meatus, and compared it with the increase of bone-conduction when the tympanic apparatus was interfered with. He (the speaker) asked whether that increase of bone-conduction in the latter case was not due to the better conducting power which occurred on account of the increase in tension in the tympanic conducting apparatus. He agreed with Dr. Barr that the acoumetric formula which was suggested at the Budapest Conference of 1909 was very complicated. Otolologists required in their work some means whereby they could arrive at a diagnosis in a large hospital clinic fairly quickly, and a simple formula to record the tests. Special cases of great interest could always be put aside for more careful testing afterwards. He thought such a formula should contain Weber's, Gellé's and Rinne's tests, a record of the bone-conduction, a record of hearing for low tones and for high tones, and a record of the hearing distance for the acoumeter, the ordinary voice and whispered speech. The tuning-fork tests in that formula were helpful from a diagnostic point of view, and the tests with the voice and the acoumeter were useful as evidence of improvement. He asked whether Mr. Scott could say that the steel monochord was a reliable instrument for taking high tones. The ordinary Galton whistle he had discarded for some time, and had been using the Edelmann-Galton whistle, but he did not think this was above suspicion when used in the case of tones above 16,000 or 17,000 double vibrations per second. Moreover, the sound of the air passing through the whistle for very high tones added to the difficulty.

MR. G. J. JENKINS expressed his appreciation of the opening paper, and especially of Mr. Scott's model. The flattening out of the seventh nerve in that specimen was extraordinary, and he did not think anyone would have believed it possible unless one had seen the model, which gives absolute proof of the position and form of the nerve in this specimen. He understood that there had been a caries of the bony canal of the seventh nerve, and that cholesteatoma had flattened and pushed the seventh nerve down into relation with the stapes.

¹ JOURN. OF LARYNGOL., RHINOL., AND OTOL., June, 1912, p. 312.

Dr. Barr made out the Weber and Rinne tests to be somewhat in the nature of rivals, not as complementary. He had been making observations with the Rinne and Weber tests, and he had arrived at this conclusion: Observations and experiments made him believe that those tests were dependent, *first* on the fact that middle-ear deafness would, by interfering with the conduction of noises of an ordinary room, diminish the confusion effect of those noises on the affected or more affected side; and so, when a sound stimulus was applied equally to both auditory terminals by placing a vibrating fork on the middle line of the head, it would be appreciated more distinctly on the affected or more afflicted side; and *secondly*, on the localisation and the source of a sound—a psychological process. With regard to Mr. Scott's remarks on the comparison of air- and bone-conduction in the Rinne test, Mr. Jenkins did not think it could be held that this test implied that air-conduction was better than bone-conduction, but simply that the sound stimulus by air-conduction from the limbs of the fork was greater than the stimulus by bone-conduction from the base of the fork. Mr. Jenkins did not agree to the physics of Mr. Scott's theory, by which he argued that bone-conduction was equal to, or better than, air-conduction. Mr. Jenkins thought it not altogether possible to compare the effect of the vibrations derived from the limbs of the fork (in air-conduction) with that of those of the base of the fork (in bone-conduction), as these vibrations were not the same. He said a tuning-fork might be regarded as a bent rod clamped in its middle, which practically became a node. To the region of this node was attached the stem of the fork. When the limb of the fork was struck there were the coarse transverse vibrations which were the source of the sound vibrations and air-conduction of the Rinne test, but in addition there were longitudinal molecular vibrations set up by the above longitudinal vibrations, and these entered into the base of the fork. There were, of course, some transverse vibrations going on in the base of the fork, but it was possible, and probable, that it was the finer molecular longitudinal vibrations which were taken up in bone-conduction. The form or degree of vibration might be suitable for establishing sound-vibration in air, but not so for bone-conduction, and *vice-versâ*.

Mr. WESTMACOTT agreed with Dr. Barr and Mr. Yearsley with regard to a definite scheme of hearing tests. He had always felt it a great difficulty in a clinic to get through the tests in anything like a satisfactory way, both as to the time occupied, the difference in the instruments used, and the results obtained in different hands.

Mr. HUGH E. JONES said he was very much struck with Mr. Scott's remark about psychical deafness, as that was a matter which had always strongly impressed him. He had concluded that there were very many cases which were not deaf in the ordinary sense at all, and one could not find out that they were either nerve-deaf or deaf from defect of conduction, but they appeared to be psychically deaf. Perhaps it was impossible to prove that.

Mr. SYDNEY SCOTT, in replying on the discussion, said his object had been to put before the Section certain statements and suggestions to provide a basis for discussion. He laid stress upon two points: One was that he considered all tones were better conducted by bone than by air, and that he still maintained, in spite of what had been said in the discussion. It meant that reliance on Rinne's test was likely to lead to fallacies, and he thought on fuller consideration it would be agreed that he had good reasons for saying what he did. He expressed his appreciation of Dr. Dundas Grant's remarks as well as Mr. Yearsley's. Those who

worked with the monochord would find that bone-conduction was better than air-conduction. He placed great reliance on the steel monochord, and agreed with Mr. Yearsley with regard to the Edelhmann-Galton whistle.

PROCEEDINGS OF THE ROYAL SOCIETY OF MEDICINE—LARYNGOLOGICAL SECTION.

March 29, 1912.

SIR STCLAIR THOMSON, *President of the Section, in the Chair.*

Abridged Report.

New Electric Light Gag for use in Operating on the Faucial Regions, etc.—P. Watson-Williams, M.D.—A small 3-volt metallic lamp carried on a stem fixed to a Doyen gag gave a good illumination of the fauces, tonsils, etc., and, being high up behind the upper tooth-plate of the gag when *in situ*, it was out of the line of vision.

Large Cyst in the Right Tonsil.—H. J. Davis, M.B.—Patient, a woman, aged twenty-four. The cyst is as large as a pigeon's egg. It is transparent, and in colour deep yellow. There are dilated venules coursing over the surface. "It commenced growing two years ago"; it is now producing some dysphagia. It is possible that the tonsil contains a calculus. Dr. Davis added that the cyst burst after a singing lesson and there was little to be seen at the moment, but it was now slowly refilling.

Foreign Body, a Nail 2 in. long, in the Left Bronchus of a Child, aged two and a half, with Complete Transposition of Viscera.—H. J. Davis, M.B.—The child had been ill six months when it was admitted to the West London Hospital. The child died shortly after admission in great distress, with physical signs pointing to empyema and gangrene of the left lung. An X-ray photograph was taken with difficulty owing to the child's restlessness in order to see if there was pus in the pleura, and this was explored; it was also noticed that the viscera were transposed. At the *post-mortem* a nail 2 in. long was found lying in the bronchus, and this could be observed on the X-ray plate exhibited, the nail lying head downwards in the left bronchus. Unfortunately, attention was not directed to this until too late, the child dying of septic pneumonia and gangrene of the left lung. The case is interesting from the fact that the nail fell into the *left* bronchus. It is well known that for anatomical reasons the right bronchus is the one into which a foreign body is more likely to drop, but in this case, owing to the complete transposition of viscera, the *left* bronchus is practically the *right* bronchus, its lung having three lobes instead of two, and the aorta hooking over the right bronchus instead of the left. The case also calls attention to the fact that in children unilateral lung disease should always suggest a foreign body, just as a unilateral nasal discharge should do. A well-known authority has stated that if bronchoscopy were systematically done, foreign bodies would be more frequently found.

Dr. DAVIS added that on the X-ray plate the nail looked as if it were 3 in. long. If the cause had been recognised during life the child's life might have been saved.

Mr. WAGGETT put in a general plea for direct inspection in obscure lung cases. He had seen an infant allowed almost to die with a piece of maize-leaf in its trachea for several weeks. When this was discovered by direct inspection and removed, cure immediately followed.

Dr. BROWN KELLY agreed as to the importance of examination with the tube where there was unilateral lung disease. That month at the Edinburgh Court of Session a dentist was sued for allowing a tooth to pass into the lung. The accident happened four years ago, and for three years the patient had been coughing up blood and matter. At the end of that period the tooth was recovered. If the bronchoscope had been used a great deal of trouble might have been saved. The dentist had to pay heavy damages.

Mr. HARMER said that it was not only in children that such cases occurred. He was once asked to see a man who had one-sided pneumonia which would not clear up. A skiagram had been taken and it was supposed to show an intubation tube. Years ago the patient had been treated for stenosis of the larynx by intubation. Mr. Harmer examined with the bronchoscope, and found pus coming from the right bronchus, but no foreign body. The tube suddenly slipped into an abscess cavity in the lung. In that cavity he was able to feel something metallic, and on bringing it out, found it to be half of a bi-valve tracheotomy tube. The patient had been wearing this for years, and on one occasion when withdrawing it the tube was not complete, but he said nothing about it, and it had been in his lung all that time.

Mr. HERBERT TILLEY showed a man who had had a mutton bone in his right bronchus for three and a half years. After he had been in the hospital for six weeks it was suggested that he should be examined with the bronchoscope. On the second occasion the mutton bone was found and removed. If the foreign body were lodged in the bronchus for some time there was inflammatory congestion around, and the skiagram was not likely to show it. He was told that unless an instantaneous X-ray picture were taken the foreign body would probably be missed.

Dr. WYLIE said he had had two or three cases of foreign bodies in the lungs, and had also seen other cases in consultation. In every case there was marked fetor of the breath. When fetor was present, and nothing in the form of bronchiectasis could be diagnosed, the chest should be X-rayed at once.

Dr. MIDELTON said he had had two similar cases in his practice. In one case a man's pipe broke and a piece entered his lung. Several medical men saw him, but could not make out what was the matter. The piece was subsequently coughed up. There was fetor, and a constant cough. Another man swallowed a piece of mutton bone, and for eighteen months he was treated for consumption. He happened to cough it up and then got well.

The PRESIDENT said it was agreed that every case of chronic unilateral pulmonary disease which was not tuberculous should be examined by X-rays and the bronchoscope.

Dr. H. J. DAVIS replied that there was marked fetor in this case, and when this was present it pointed to gangrene of the lung; it did not necessarily mean that it was due to a foreign body.

Tonsils Enucleated by means of a 16 mm. Mackenzie Guillotine.—**E. A. Peters, M.D.**—(a) The tonsil is inserted into the ring of the instrument with the support of the anæsthetist at the angle of the jaw, and drawn forward over the internal pterygoid and internal lateral ligament. The handle of the guillotine comes across into the opposite angle of the mouth. The attachment of the pharyngeal aponeurosis and superior constrictor to the jaw gives a fixed point, so that the tonsil is dissected from the posterior pillar, while the anterior pillar of the fauces is protected by being made tense. Two separate adjustments and cuts are essential by this method, and the capsule is usually secured.

(b) Another method of removal: the earlier manipulation is the same, but the first cut only goes through the attachment of the tonsil to the anterior pillar; the blade is not pushed home. The ring of the tonsillotome is readjusted and the blade made to cut through, when the whole tonsil and capsule come away.

Specimens exhibited.

Dr. WATSON-WILLIAMS said he had seen Dr. Peters operate on tonsils by the first method, and he fulfilled all the claims he put forward; the tonsils were removed and the capsule was practically complete.

Mr. NORMAN PATTERSON said that for the last week or two he had removed tonsils by the method described by Sluder, and Whillis, of Newcastle, in the routine of out-patient work. One could completely enucleate the tonsils in 90 per cent. of cases.

Mr. HERBERT TILLEY seized the tonsil with forceps such as those which he introduced two years ago, freed the anterior and posterior pillars, and then slid the snare over the tonsil. The wire loop found its way into the bed of the tonsil, and on putting on pressure the whole gland came away. The advantage of the snare was its tendency to stop after-bleeding. He had tried many methods and preferred the snare.

Mr. HARMER said that during the last three months at St. Bartholomew's Hospital enucleation of tonsil had been done on a large number of children by the guillotine. The after-results were not quite satisfactory, because more children than formerly had to be kept in the hospital for very severe bleeding. Two or three cases were admitted on the fourth or fifth day because of severe bleeding after the operation.

Dr. DAN MCKENZIE corroborated the idea that bleeding was more frequent and more severe after enucleation of tonsils than after their removal by the ordinary method. The complete operation by any method necessarily exposed the patient to more risks from bleeding than the other did. Was that bleeding ever fatal, and if so, how often? He himself believed the risk to life from the bleeding was not great.

Sir FELIX SEMON said the question had again and again obtruded itself on his mind whether it really was necessary to enucleate so many tonsils as was nowadays the practice. He was always ready to welcome any progress, and he was glad that in this method of enucleation one had a means of dealing with some troublesome forms of enlargement of tonsils—namely those in which the tonsils were constantly suppurating and forming cheesy collections, or those forms in which there was one acute inflammation after another, and in which partial removal had been no good. If there was a method which did away with the necessity for ever-repeated operation in those cases, so much the better, but, generally speaking, he had always tried in his own practice to observe a true proportion between the gravity of the illness and the measure of interference, and could not help asking himself whether it was really necessary to enucleate so many tonsils when smaller measures would suffice. He

did not consider that the loss of blood after the operation was a matter of indifference in a growing child, even though the child would eventually make it good. He was of opinion that mere tonsillotomy in the great majority of cases fully sufficed.

Mr. WAGGETT thought that protest should be made against Dr. Dan McKenzie's supposition that the wounds bled more freely after enucleation, than after tonsillotomy. In his own experience they bled less after enucleation, provided that blunt instruments, such as an elevator and snare, were used. In answer to Sir Felix Semon, everyone would agree with him that "the punishment should fit the crime," but in his experience the punishment of enucleation with blunt instruments was a lesser one than that of tonsillotomy.

The PRESIDENT agreed that the capsule of the tonsil limited for a long time the spread of malignant growth which started in the tonsil. The question of the protective power of that capsule must be considered. With regard to enucleation, at the meeting of the British Medical Association in London two years ago, he was one of the few who said that enucleation could be carried out with the guillotine.

Dr. PETERS, in reply, said that it was not the size of the tonsil which determined its degree of sepsis. The small tonsil he showed was full of septic material, and had caused enlarged glands. Ninety-five per cent. of children had enlarged cervical glands at the angle of the jaw in association with septic tonsils. Doubtless it was not necessary in every case to remove the whole tonsil, but there were cases in which one saw trouble from a piece of tonsil which had been left, and complete removal seemed desirable. The manipulation was satisfactory for hidden tonsil, but not so good for the long tonsil, which went down to join the lingual tonsil. With regard to bleeding, he thought his procedure had a distinct advantage. He did not think there was much advantage in pushing the tonsil through the guillotine.

Asthma with Swollen Middle Turbinals.—E. A. Peters, M.D.—Woman, aged forty-two. The illness commenced eighteen months ago with paroxysmal rhinorrhœa; lately the patient has developed asthma, which affects her most nights. The nose presents a condition of chronic rhinitis; the inferior turbinals are swollen. The middle turbinals are œdematous and compress the septum. This last condition is characteristic of nasal asthma.

Tumour of the Left Antrum.—E. A. Peters, M.D.—W. H.—, aged fourteen. A swelling has been noticed for twelve months. The left maxillary antrum has expanded in every direction except towards the palate. The wall is everywhere hard. The antrum is opaque to transillumination.

The PRESIDENT asked whether the antrum had been explored. He believed it would turn out to be a peridental cyst, and that the antrum was clear. Perhaps Dr. Peters would puncture it and explore from the nose; and secondly, operate on it from the canine fossa. It did not follow the outline of the antrum. It was more suggestive of a cyst invaginating the antrum, and to a great extent replacing it.

Dr. H. J. DAVIS did not think it was antrum, because it did not bulge towards the palate nor encroach into the nose. He regarded it as a superficial condition at the outside of the malar and superior maxillary bones.

Dr. BROWN KELLY thought it was a maxillary cyst or malignant disease in the antrum. It looked and felt like a cyst, but there were no decayed teeth, and it had grown rather rapidly. Aspiration would settle the question.

Enophthalmos; Total Ophthalmoplegia; Fixation of the Eye to Floor of Orbit and Partial Blindness. ? Result of Curetting the Ethmoidal Region in April, 1911.—Hunter Tod, F.R.C.S.—This patient, a male, aged sixty, came to hospital in December, 1911, suffering from pain in the left eye, with a chronic inflammatory swelling over the malar region and lower part of the orbit. He stated that the swelling began shortly after he had undergone an operation, not performed by the exhibitor, for nasal obstruction on the left side. Examination of the nose showed that the ethmoidal region on that side had been scraped out and the middle turbinate removed. There was no growth in the nose. The eyeball became gradually fixed, the pupil dilated and ceased to react; the optic disc was clear. An irregular hardish mass could be felt on the inner side and floor of the orbit. Since the operation there had been some slight purulent and blood-stained discharge from the nose. As the eye got more fixed, it became drawn down into the lower part of the orbit, so that the upper part of the cornea could only just be seen. Later, the cornea became hazy above, and finally retraction downwards of the eyeball prevented even the sclerotic being seen. The finger could be passed right back over the eye along the upper part of the orbit and nothing abnormal could be felt. It then appeared evident that the changes in the eye and orbit were due to some definite retraction downwards of the eyeball as if the floor of the eyeball had been curetted away. Mr. Hunter Tod thought that there was no doubt that the condition was secondary to the operation performed. Although there were signs of inflammation, there had been apparently no acute peri-orbital abscess, probably owing to the fact that there was free drainage into the nose.

Mr. Tod made an exploratory incision along the lower margin of the orbit. He then discovered that the whole floor of the orbit had been completely curetted away, together with the inner wall of the antrum. The finger could be passed through the nostril out of the wound, and posteriorly behind the eyeball, along the optic nerve. As there seemed nothing definite to do, the wound was re-sutured. The patient still complains of supra-orbital headache. The question arises whether the eye should be removed, but owing to the septic condition within the orbit, the ophthalmic surgeon hesitates to do this.

The PRESIDENT said he had never seen a similar accident either in his own practice or that of any colleague.

Dr. H. J. DAVIS said the eyeball was rotated downwards, as the pupil was looking directly downwards towards the antrum. It looked as if there had been suppuration in the orbit.

Dr. DAN MCKENZIE remarked that it might have been syphilitic necrosis, and that one could not very well draw lessons from the case without details of the operation on the nose.

Bleeding Tumour of the Septum.—Hunter Tod, F.R.C.S.—The patient, a boy, aged eighteen, states that he has had epistaxis since Christmas. His medical attendant observed a small growth on the left side of the septum, part of which he removed by means of a snare eight weeks ago. The growth recurred rapidly, and a similar operation was performed two weeks later. On examination a polypoid growth, the size

of a large pea, is seen to arise from the anterior superior margin of the septum; it bleeds freely on probing.

Since this report the patient has been operated on, the growth being cut away from the septum. A section taken by Mr. Pegler demonstrates a true "bleeding polypus."

Instruments for Use with Brünings' Tubes.—Irwin Moore, M.B.

(a) Forceps for removing foreign bodies—*e.g.* coins, tooth-plates—from œsophagus.

(b) Cutting pliers for cutting through a tooth-plate impacted in the œsophagus.

Dr. MOORE explained that the instruments were for cases for which Brünings' forceps might be too light, for they occasionally broke during manipulation. The forceps shown were of use for extracting tooth-plates and coins. They had to be closed before being passed down the tube, and there was plenty of room left for seeing the foreign body.

Lupus of the Nose treated by Tuberculin.—W. Stuart-Low, F.R.C.S.—Male, aged fifteen. The usual treatment having been of little avail, a weekly injection of tuberculin has greatly improved the condition in the course of a month.

Large Cyst on the Soft Palate of a Boy.—W. Stuart-Low, F.R.C.S.—The cyst has existed for years, but has never given any inconvenience.

Mr. STUART-LOW added that the cyst was growing from the palate on the inner side of the arch, and he agreed it might possibly be an internal branchial cyst.

Large Aberrant Thyroid in a Woman.—W. Stuart-Low, F.R.C.S.—The case was shown three years ago, when the patient exhibited a large aberrant thyroid far back and deeply situated in the tongue. She had been operated upon on three occasions for its removal at London hospitals before coming to the clinic, but recurrence had always taken place. The method of splitting the tongue down the middle and thorough eradication introduced by the exhibitor has succeeded, and no evidences of myxedema have supervened.

Total Laryngectomy by a Suicide.—Douglas Harmer, F.R.C.S.—The patient, a woman, aged thirty-five, removed her larynx with an ordinary dinner knife, and it was found lying on the floor. A square hole was left in the front of the neck bounded above by the hyoid bone, laterally by the sterno-mastoid muscles and the carotid arteries, both of which were freely exposed. The upper end of the trachea was found just above the suprasternal notch and the œsophagus a little higher. The floor of the wound was formed by the prevertebral muscles and spinal column. No large vessels had been wounded. The woman was conscious but very collapsed, and had lost altogether nearly a quart of blood. She was removed to the local hospital, where she rallied, but again collapsed twelve hours later and died in about five minutes. The specimen is similar to one shown recently by Dr. Peters.

The PRESIDENT remarked that the absence of immediate shock was peculiar, as one would have expected shock after such violent excision of the larynx. Dr. Peters' patient ran 200 yards after a similar procedure.

? Pneumococcic Laryngitis followed by Suppurative Arthritis, Endocarditis, Septicæmia, and Death.—**Douglas Harmer, F.R.C.S.** (for **A. Abrahams, M.B.**).—Heart exhibited to show large recent vegetations of tricuspid valves. The history of the case was as follows: A man, aged forty-five, was admitted to the hospital with urgent dyspnoea and stridor of three days' duration. The onset of the disease was said to have been sudden. The larynx was œdematous and intensely red. He had slight bronchitis and a temperature of 102·6° F. The urine was very scanty and contained 0·1 per cent. of albumen. He had slight œdema of the hands and legs. The cultivation of the throat showed a majority of pneumococci. During the next four days the patient steadily improved, the larynx recovered, and it was thought that he might soon be well enough to leave the hospital. On the sixth day he had a rigor, with a temperature of 104·6° F. He then had daily rigors for six days, when he complained of pain in the right shoulder-joint. An exploration was made by Mr. Gask, and thick, ropy pus was found in the subacromial bursa. Cultivation of the above showed a pure growth of streptococcus. Some improvement followed for a few days; afterwards there were daily rigors, the heart became affected, and streptococci were recovered from the blood. Death occurred three weeks after the operation on his shoulder. *Post-mortem.*—The larynx was still a little inflamed; the heart had large green recent vegetations on the tricuspid valves such as are usually found with pneumococcic infections. The heart's blood contained streptococci; the lungs showed recent pleurisy and septic infarcts; spleen and liver were both enlarged.

Sir **FELIX SEMON** said he had recorded a case in which a well-known colleague died, after several months' illness, from a condition which began with pure pneumococcus infection, upon which a tuberculous infection supervened. And during the time he lived it was interesting to examine different parts. Until a few weeks before death the laryngeal condition was purely tuberculous, whilst examination of the pharyngeal ulcers showed almost pure cultures of pneumococci.

Case of ? Lupus of Nasal Septum.—**Dan McKenzie, M.D.**—Female, aged forty-one. The disease seems to be limited to the anterior area of the septum on both sides. No perforation can be discovered. Attention is directed to the turgid and swollen appearance of the mucous membrane. There is a history of eight years' nasal obstruction, and the chronicity of the disease—if the disease has actually been in existence for so long—coupled with its limitation and absence of destruction, is remarkable.

Mr. **HERBERT TILLEY** said he would be surprised if the case were lupus, or even lupoid. The mucous membrane over the anterior part of the septum seemed very turgid and wet. He thought there was warrant for relieving the obstruction by removal of some of the septal cartilage.

The **PRESIDENT** said he did not think the case had the characters of lupus, either in the deposit or the abrasion of the surface. The patient had had sneezing for many years, and there was a corrugated thickening. There was the same condition on the other side, and on the turbinates.

Dr. **H. J. DAVIS** suggested frictions of lactic acid.

Dr. **McKENZIE** replied that his own impression was that it was not lupus, or if it was, that it was of an atypical kind. The microscopical report was that it was simple granuloma.

Tertiary Specific Ulceration of the Pharynx undergoing Malignant Transformation.—**Dan McKenzie, M.D.**—The patient is an old man, aged eighty-one. According to the history the throat has been troubling him for three months. The syphilitic element is still active; it has destroyed the uvula, much of the soft palate, and has eroded the tissues in the tonsillar regions. Here in the region of the left tonsil a raised area, rather nodular in appearance and hard to the feel, made us suspect the existence of malignancy. The nodule was therefore removed, and examined by Dr. Wyatt Wingrave, with a positive result. There is a small hard gland under the left angle of the jaw. Wassermann reaction negative. The patient is on iodide of potash, and has already benefited by it.

Subsequent History of a Case of Swelling in the Right Tonsillar Region in a Woman, aged twenty-four.—**W. H. Kelson, M.D.**—The case was shown at the February meeting. Operation: Although the appearances were very suggestive of deep-seated pus none could be found. The right tonsil was enucleated, and the glandular masses excised. The patient did well at first, but died on March 2 of pleuro-pneumonia. Microscopical section of gland shown.

Dr. Kelson added that most of the members who spoke on the case agreed that it was probably inflammatory, and that there was pus somewhere. It showed how deceptive appearances might be, because no pus was found anywhere, and it turned out to be growth, probably sarcoma. He enucleated the tonsil first, and later removed the mass from the outside. The patient seemed to do well for a fortnight, but then got pneumonia and died.

The President said he had expressed the opinion that it was tuberculous, and that there was no suppuration.

Specimen presenting Traction Diverticulum of Œsophagus and Atrophy of Left Vocal Cord, due to Infiltrated Gland beneath Arch of Aorta.—**A. Brown Kelly, M.D.**—Mr. —, then aged seventy-one, consulted the exhibitor in 1905 for hoarseness of a few months' duration. The left vocal cord was found stationary in middle line with concave edge; this condition remained unchanged throughout life. There was no disturbance of deglutition. Death took place early this year from weakness and purulent bronchitis. In the concavity of the aortic arch a small, darkly pigmented gland is seen. In consequence of cicatricial contraction it has involved the left recurrent laryngeal nerve, and has produced a traction diverticulum in the adjacent wall of the Œsophagus. On the left side, owing to atrophy, the vocal cord is thinner, and the ventricle of Morgagni more open than on the right side.

Œsophagus with Perforations due to Ulceration produced by Foreign Bodies.—**A. Brown Kelly, M.D.**—The subject, an imbecile lad, aged sixteen, from whom a coherent statement could not be obtained, was suspected of having swallowed a foreign body. The medical man consulted examined him with X-rays, but found nothing abnormal. As marked inability to swallow persisted, he was sent to the exhibitor about a fortnight after the supposed accident for examination of the Œsophagus. At the lower end of Brünings' longest tube when fully introduced a foreign body was encountered; and lying above it were two peas. The body itself was firmly embedded in the posterior wall of the gullet, and the surrounding mucous membrane presented

many granulations. After considerable trouble the body, which proved to be an acorn, was broken up and removed piecemeal. Beneath it a large part of a vertebra (? sheep's) was found and comparatively easily extracted. As a perforation into the trachea had been detected before operation no food was given by the mouth. In spite of this precaution, and efforts to keep the parts clean, the patient died a week later. The *post-mortem* revealed multiple abscesses and gangrene of the lungs. The specimen shows five perforations in the posterior wall, where ulceration had extended to the underlying vertebral column, and one in the anterior wall communicating with the trachea.

Œsophagus with Cicatricial Stenosis caused by Carbolic Acid.

—**A. Brown Kelly, M.D.**—The subject, a man, aged fifty-one, swallowed by mistake two mouthfuls of carbolic acid. On admission to the infirmary seven weeks later he could get over only single sips of fluid. His debilitated state and the smallness of the stricture interfered with treatment. Death, accelerated by phthisis, took place about three months after the accident. The stricture was almost impervious, and extended for a distance of about 2 in. in the lower third of the œsophagus, ending 2 in. above the cardia.

Cancer of Œsophagus projecting into Trachea.—**A. Brown Kelly, M.D.**—Man, aged forty-three, developed a large swelling in front of neck in June, 1911. On being opened very foul pus escaped and continued to discharge freely, mixed frequently with food, until his death. In October, first examined by exhibitor, who found abductor paralysis of left cord, bulging of posterior wall of trachea, and ulceration of upper part of œsophagus. Dysphagia became pronounced only towards end of year. Gastrostomy early in January. Death a month later. The growth, beginning at upper end of œsophagus, extends downwards for a distance of 5 in., and involves the entire circumference. The anterior wall, 2 in. below upper margin of growth, presents an area of ulceration and punching towards the trachea. At this level there is bulging of the posterior wall of the trachea for a distance of about 2 in., but no erosion of the mucous membrane.

Laryngeal Crises with Abductor Paralysis.—**Edward D. Davis.**

—A coachman, aged thirty-eight, came to hospital in May, 1909, complaining of difficulty in breathing of some three or four months' duration. About twice a week he would suddenly jump out of bed, make a crowing noise, and would be unable to breathe. The attack lasts a few seconds. He is short of breath on exertion and breathing is occasionally stridulous. He contracted syphilis six years ago. The patient was admitted under Dr. Mott for observation for ten days, and the above diagnosis was confirmed. On examination of the larynx the vocal cords are in a position of complete adduction. During deep inspiration there is scarcely any abduction, but there is a narrow chink in front and behind the vocal processes. The condition of the larynx is precisely the same now as it was in May, 1909. The pupils are unequal and do not react to light; optic discs normal. Knee-jerks present, lightning pains, difficulty of micturition; positive Wassermann reaction obtained twice.

Sir FELIX SEMON remarked that the interest of this case lay in the fact that the knee-jerks were not yet abolished, and that was important as showing the diagnostic value of the abductor paralysis, which, in his experience, might precede by as much as two or three years the other symptoms of tabes. Therefore in every obscure case, whether of unilateral

or—more frequently—bilateral abductor paralysis, the possibility of tabes should be kept in view, even if no other symptoms of tabes were as yet present. He had shown one case of that kind before the Clinical Society in 1878, in which the laryngeal symptom preceded all the other signs of tabes by two years, and this was, indeed, the case from which the whole doctrine of the greater vulnerability of the abductor fibres in organic disease of the motor laryngeal nerves had started.

Mr. DAVIS, in reply, said tracheotomy had been arranged for several times, but had been postponed. Dr. Mott's opinion was that the changes were high up in the cord, possibly in the region of the medulla, perhaps a localised meningitis.

Epithelioma of Pharynx; Operations.—**Norman Patterson, F.R.C.S.**—Male, aged fifty-two. Pain in throat on swallowing and coughing first noticed about April, 1911. Patient has been treated for trouble in the gullet and stomach, said to have followed the swallowing of zinc sulphate eighteen months ago. Throat first examined beginning of November, 1911. Irregular growth, apparently superficial, affecting anterior aspect of right side of soft palate and upper part of anterior pillar and tonsil. Microscope showed typical epithelioma. There was a hard gland at the site of carotid bifurcation. First operation (November 9, 1911): Right anterior triangle cleared of glands and fascia with exception of submaxillary region. Several inches of internal jugular vein, to which gland was adherent, resected. A large portion of sternomastoid, together with deep fascia and shotty glands in relation to its under surface, removed in one mass. The condition of the patient made it impossible to proceed with the removal of the primary growth, and he subsequently developed hypostatic pneumonia, which left him in such poor health that no other operation was possible for some time. When seen in February the growth had crossed the middle line and involved the whole uvula. It covered the tonsil and anterior pillar, involving also the mucous membrane in front of this structure. Below it had crept on to the tongue. Second operation (February 12, 1912): Preliminary laryngotomy and splitting of cheek. The mass, together with half an inch of mucous membrane at its periphery and as much healthy tissue on its deep aspect as possible, was removed. This dissection included the removal of a portion of the tongue and floor of the mouth, and was accomplished under intra-venous ether. The recovery this time was free from any complications. Shortly after the first operation paralysis of the right cord was noticed, and this remains. There is some fulness in the neck just below the tip of the mastoid process. This has been watched for three months and has not increased.

Growth in Post-nasal Region.—**W. Jobson Horne, M.D.**—Man, aged fifty-eight. Growth starts from right side. Duration about nine weeks. Deafness in right ear.

Dr. KELSON said he considered it was similar to the cases recently described by Mr. Trotter with the three cardinal symptoms—viz. deafness, paralysis of the palate, and neuralgia—except that the man had not had much pain.

Stenosis of Larynx.—**L. H. Pegler, M.D.**—Woman, aged sixty, with laryngeal stridor of more than one year's duration. There is great swelling of both ventricular bands, and also of the left vocal cord; the right vocal cord is not visible. The dyspnoea has increased during the

last year. The tuberculin tests have been found to be negative. The question of treatment is an important one.

The PRESIDENT said the woman had extreme stenosis, evidently more than was due to the infiltration of the ventricular band. He thought that if such diseases as syphilis and tubercle had been excluded, it would be necessary to perform exploratory laryngo-fissure.

Report on Mr. Wilkinson's Specimen of (?) Papilloma removed from the Posterior End of the Right Inferior Turbinal.¹—Dr. Wilkinson's specimen has been submitted to the Morbid Growths Committee. The members who have examined it are of opinion that the specimen is an example of moriform hypertrophy of the turbinate, and that the term "papilloma" is not applicable to it.

PROCEEDINGS OF THE SCOTTISH OTOLOGICAL AND LARYNGOLOGICAL SOCIETY.

Meeting in the Royal Infirmary, Glasgow, May 11, 1912.

DR. J. KERR LOVE *in the Chair.*

Reported by the Hon. Secretary, DR. W. S. SYME (Glasgow).

The Oral Method of Educating the Deaf.—J. Kerr Love, M.D.—Dr. Kerr Love gave a short review of the oral method of educating the deaf. His object, he said, was to demonstrate the advantage of oral teaching as applied to all deaf children, but particularly to those who have some remains of hearing—the semi-deaf, and to those who, though quite deaf, have some remains of speech—the semi-mute. These form from 20 to 30 per cent. of all deaf children.

If speech be interfered with at an early enough period of life the vocabulary becomes lessened, and ultimately, unless special training be adopted, dumbness results. If hardness of hearing occurs at six or seven years of age, the progress of the child in school becomes arrested. Under the present system of passing children on from one standard to another each year, it is not uncommon to find in elementary schools a child who has been in a condition of educational stasis for half a dozen years—in other words, who has reached the age of twelve and only has the knowledge of six, the age at which the loss of hearing occurred. In consequence partly of the discovery of those children and partly because medical inspection has demonstrated the value of special classes, they have in Glasgow set up a school for the semi-deaf and semi-mute, some of the children from which school formed the illustrations of his remarks.

When a child does not hear whispered speech at a distance of six feet with at least one ear, that child is not fit to remain in the ordinary class of an elementary school. When an adult does not hear whispered speech at six feet he appeals for some aid to hearing. This may be conveniently called the six-foot rule.

¹ Shown at the meeting on March 1; JOURN. OF LARYNGOL., RHINOL., AND OTOL., June, 1912, p. 323.

Now, one knows that most children become auditives; but children who have never heard become visuals. So that the child who has never heard has a different thought-process from the child who has heard. Then there are some children in whom speech and hearing still remain to a slight extent: these are children who have heard for a year or two, some of them four or five years, and then because of loss of hearing during the course of two or three months have become entirely dumb. It has become the practice in every country to treat as true deaf and dumb the semi-deaf and semi-mute. Against this practice he would like to protest. He would show them examples of resurrected speech, speech which was sufficient to carry the individual through the whole hearing world, and not an unknown language fit only for the narrow world of signs and finger-spelling.

When the speech is lost at, say, two years; one is very apt to say that the speech which existed before two years was of no value. Here again he would protest, because he believed that any speech and hearing were of permanent value to the individual. The kind of speech in deaf children largely depends on the amount of hearing which exists when the child falls deaf. Not only is the voice more musical if some hearing exists, not merely is it more distinct if the speech be resurrected, but the vocabulary is very much more extended. It would not be necessary for him to say, after what was to be demonstrated, that the speech remaining in these children would be most valuable in after-life.

The question arose whether the speech of the true deaf and dumb was worth having. In other words, is the oral method of teaching the deaf worth while? Is it worth while spending so much time and money in order to get such results? Now that depended partly upon where the child has been taught and partly upon what the standard of oralism is to be. If one expects those children to go through the business of life—to ask for railway tickets, to go in to shops and ask for all they want, and to be understood by all kinds of strangers who speak, one will be disappointed, but if one sets up a reasonable standard of oralism, one which he believed to be worth having, and applied it to the cases which came before them, they would see that it is worth while.

This is the standard he would set. A child who is able to speak to his father and mother, brothers and sisters, and when he becomes older, to his employer and fellow workmen, and is able with some success to talk to his friends and understand all they say, is in his opinion an oral success. One could not expect children by lip-reading to understand what is being said from a pulpit, although one might make them understand all that is said in a small room. In addition to having speech these children could write and do all that the finger-taught child could. The general public would never oblige the deaf and dumb by learning to speak on their fingers. He did not ask them; it would be the very worst thing they could do. Some people held that the ninety-nine hearing should learn finger language to oblige the one who is deaf; that he did not agree with, because it created a kind of language which was not natural to man and which was less useful than speech.

Examples shown: (1) Hard-of-hearing boy who had failed to be taught in an elementary school, but had succeeded in the Dovehill School. His speech is perfect. He was not able to pick up a word said in the Rockvillia school; he was passed from standard to standard, and finally brought into this school, where his progress has been that of an ordinary elementary school-child.

(2) A boy who lost his hearing from cerebro-spinal fever at the age

of five years, and who in three months not only lost his speech, but all his voice.¹ Miss Douglas after several months' training had brought his voice back. Now he has not only got a good voice, but good, although not very perfect, speech.

(3) A semi-mute from cerebro-spinal fever, who now speaks because of resurrected speech. Speaking was learned by lip-reading; he was perfectly dumb.

(4) A semi-deaf boy—he could not hear Dr. Kerr Love speaking. He at one time spoke both German and English, but so indistinctly that they could not be understood. A mastoid operation was done and hearing improved. Now, under Miss Douglas's care, he spoke English pretty well. He illustrated what happens when one teaches lip-reading to a man who has become deaf. He hears some, but often makes a very stupid answer. This boy has not sufficient hearing for an elementary school, but he has good enough hearing for this special class, and he has a key-note in his voice which is well intoned and musical.

(5) Congenitally deaf-born children (two girls). When a child is brought to one with a statement that he is mentally defective, unless there are some definite stigmata one is not entitled to say there is mental defect. When a young deaf child is brought, it is often difficult to say whether the child is mentally defective, or is deaf. The girl was brought in as mentally defective, but turned out a very intelligent child in the Dovehill School. A child should not be termed mentally defective until his ears and his eyes have been tested.

The other girl is a child of congenitally deaf parents—a case of true hereditary deafness. She is a good pupil and speaks very well. She speaks well because she has an oral environment all the time.

(6) A semi-mute girl, the result of scarlet fever at the age of eleven; she is now thirteen. She speaks perfectly, though she has no hearing, and will never lose her speech.

The question of the education of the deaf child was a most interesting one. If one wanted to produce a deaf variety of the human race, the first thing one would do would be to educate them. The education of the deaf is a cause of congenital deafness. If the deaf never met at all one would find that eventually hereditary deafness would die out. Education is responsible for the spread of deafness. If one wanted to produce congenital deafness there are three things one would do: (1) Keep the sexes together in schools; (2) teach them a language nobody else knew; and (3) when school is done, put them into missions. All of those we have done with the best of motives, but with the result that hereditary deafness has increased.

The worst of it is, that every hereditary deaf family contains hearing members, and all the hearing members are equally capable, with the deaf member, of transmitting the deafness. One has always to think of the hearing members in every deaf fraternity. So that the question as to whether we are to prevent the deaf-born from marrying is a very far-reaching one.

As regards lip-reading in adults, he had not been able to bring any examples, but there were some classes for such in Glasgow and other towns, and good results were being obtained. Lip-reading was the best aid to hearing, better than any ear-trumpet or electrical apparatus.

¹ That is, the power also of emitting unintelligible cries such as very young children make.

Practical Illustrations from the Classes of the Dovehill School for the Semi-deaf and the Semi-mute.—Miss Douglas.—They began the education by exercises, in order to correct the breathing of the children, many of whom breathed through the mouth rather than the nose. They then went on to the articulation. They did not use the alphabet, but the phonetic value of the sounds, and illustrated this by the word "far." They began by holding the back of the hand so that the pupil felt the breath; for the vowel-sounds the hand is put under the chin; then they went on to parts of the body, clothes, and so on. The girl shown was one of a class of twelve which had a teacher of its own; everything was done orally. They began with spoken language and went on to written language. Two children were shown who had had perfect speech and whose speech was being kept up by lip-reading.

In reply to a question, Dr. Kerr Love said no semi-deaf child hears a watch: a watch as a test is absolutely useless.

The reason the voice was not better in the totally deaf was that the child had no key-note; she hits a pitch by chance and sticks to it; one could always pick out the semi-deaf by the intonation of the voice.

Asked to define what he considered a semi-deaf child, Dr. Kerr Love said—A child who does not hear whispered speech at more than three feet. One can test a hard-of-hearing child by speaking to him, but when a child is so deaf that he requires to be helped by watching the lips, then that child is semi-deaf. Roughly speaking, a child who does not hear speech at more than three feet should be educated in a class for the semi-deaf and will require to lip-read.

Asked how long it took to teach an adult lip-reading, Dr. Kerr Love replied about thirty lessons. When in America he visited Mr. Witchie's school, where there was a young man being taught by a lady. He was getting words from the mouth and had been taught in twenty lessons. During the lesson Dr. Kerr Love asked the lady many questions and was surprised to hear afterwards that she also was deaf. The length of time required varied very much in different adults. Lip-reading consisted in teaching people to make certain movements and allowing them to fill in the rest by inference; it depended on acuteness. Some people may learn in twenty lessons, others may take 1000, but thirty lessons along with practice at home was usually sufficient.

Dr. Kerr Love said if a child was put into an institution which was a combined school, there would be no speech worth talking about at the end of ten years, because he is mixing with children who are signing and spelling on the fingers, and the lip-reading child would fall to the lower platform of the signing child; but if one took a good oral day-school the speech would be worth more after ten years—for example, if one wants one's daughter to learn German, one would not send her to a school where English is spoken, but to one where only German was allowed.

Asked if children orally taught are able to fill responsible positions, Miss Douglas replied that several pupils had recently gone out of school and were following various occupations, such as book-binding, millinery, etc., and were using ordinary speech. They had been in school three years, but having reached the age of sixteen had to go out.

In answer to the question—How long is it before a congenitally deaf child understands the words he uses, Miss Douglas said two or three months; they used pictures, and had newspapers, illustrated journals, etc. every morning. The children were not allowed to use any pantomime

whatever after they were taught the word—a child might sign for water till he was tired, but he would not get it till he asked for it.

In answer to a question, they did not think these children were better at drawing than other children.

With regard to picking up foreign languages, Dr. Kerr Love said he did not think they were sharper. He, however, understood that Helen Keller had picked up German in three months' time.

Lantern Demonstrations of the Inner Ear.—J. S. Fraser, M.B., gave a demonstration of the inner ear from cases of congenital deafness. **Albert A. Gray, M.D.**, also showed lantern-slides illustrating pathological conditions in the inner ear.

CASES.

Cerebral Abscess; Operation; Recovery; Patient shown.—J. Kerr Love, M.D.—J. D—, aged eleven, admitted to the Glasgow Royal Infirmary on July 8, 1911, complaining of severe headache and fever of six days' duration. *History.*—Intermittent ear discharge for eight years. No discharge since onset of headache; no rigor or vomiting, no rigidity of neck. Three hours after admission patient vomited. This was followed by a convulsion lasting about ten minutes, and succeeded by a second convulsion an hour later. Several minor attacks followed. Radical mastoid operation performed next day. Pus was found in the antrum, and was traced upwards through the floor of the middle fossa, where a cerebral abscess was found and opened. About half an ounce of pus escaped. The patient made an uninterrupted recovery. A plastic operation to close the posterior wound was performed on September 6.

Cerebellar Abscess; Operation; Recovery; Patient shown.—J. Kerr Love, M.D.—J. S—, aged eight, admitted to the Glasgow Royal Infirmary on September 11, 1911. *History.*—Twelve months before admission she had discharge from the right ear, and an abscess appeared behind the ear. This was opened; the discharge from the ear continued intermittently, but no further symptoms occurred till fourteen days before admission, when she complained of headache, became feverish, and had a slight rigor. During the three or four days before admission the headache increased in intensity. No giddiness, sickness, vomiting or convulsions. Seven days before admission a swelling appeared behind the ear, and this was incised two days before admission. On admission, temperature 100·6° F., pulse 96, some rigidity of neck. Mental condition dull but conscious. Operation was carried out without delay. No sinus was found in the bone after exposure by the usual mastoid incision. The mastoid was opened, and a mass of cholesteatomatous material was found and cleared out by syringing. The soft parts over the sinus were incised in a direction backwards, and the bone removed. A perisinus abscess was found. The sinus itself was collapsed, and on being opened was found to be thrombosed. A pair of sinus forceps was passed into the cerebellum through the sinus wall upwards and backwards for about an inch when a few drachms of pus were evacuated. The radical mastoid operation was completed and a tube inserted into the abscess cavity. A hernia of the cerebellum subsequently developed, but this was gradually reduced by pressure. The post-auricular wound closed by a thin broad cicatrix, and as this tended to bulge it was excised on January 10, 1912, and the flaps were united more closely by sutures. There is still a little discharge from the ear.

Epithelioma of Auricle and Parotid Region; Operation; Recurrence; Second Operation; Patient shown.—J. Kerr Love, M.D.—Stereoscopic photographs of this case were shown at the meeting in Edinburgh in November last, and these were again exhibited for reference with the patient. J. F.—, aged seventy, admitted to the Glasgow Royal Infirmary on November 8, 1911. In June, 1911, a small nodule appeared behind the left ear, caused, he thought, by the ring ear-catch of his spectacles. The nodule grew slowly at first, but then broke down and spread rapidly. On admission there was a large fungating mass involving the left ear, four inches square, and extending from the angle of the jaw backwards and upwards, its border on a level with the meatus. No enlarged glands could be felt, and the growth was not fixed. Exhibitor removed the growth and ear on November 9. A month later a recurrence was observed over the mastoid process. The process was removed with the growth. Since January the patient has had X-ray treatment, and the wound has slowly filled up by granulations.

Dr. LOGAN TURNER suggested that there was a suspicion of recurrence in the glands.

Patient with Osteomata (Hyperplastic Osteitis of Infective Origin [?]) of Palate, etc.—James Adam, M.D.—A. M.—, aged twenty-five, female. The growths involve the alveolar ridge, the hard palate, the anterior walls of the antral cavities (especially of the right), the floor of the left nasal fossa, the right middle turbinate. Lower teeth few and carious; the upper teeth must also have been carious, as they were all removed before the patient came under observation, five seven years ago, and the rest four years ago. The first teeth removed were on the left side; the growth was first noticed on the left side two years later. Anti-syphilitic treatment adopted without benefit. Wassermann negative. Spicule of bone removed for bacteriological purposes was sterile. A similar case had been discussed in London. It was thought by some to be syphilitic. It was also suggested the condition of the teeth might be the cause.

Dr. BROWN KELLY said there was here hyperostosis of the superior maxillæ involving markedly the alveolar margin and to a slight extent the facial surface, fairly symmetrical, developing slowly and in a young adult. These facts were in accordance with the case being one of leontiasis ossea.

Drs. SYME, TURNER and MILLIGAN considered the swelling, on the right side at any rate, to be a dentigerous cyst.

Patient with Tortuous Carotid on Posterior Pharyngeal Wall.—James Adam, M.D.—Female, aged forty-four. First complained five years ago of uncomfortable sensation in throat, giving rise to gulping and hawking. The vessel was then noticed. Aneurysm was suspected, but there was nothing to support this suspicion. Heart-sounds normal. No trace or history of syphilis. The vessel can be displaced outwards beneath the mucous membrane so that it disappears behind the tonsil.

Dr. BROWN KELLY said that in over sixty cases of this condition of which he had notes he had never found any symptoms. The vessel was a tortuous internal carotid, a condition not infrequently found in the dissecting room. In a paper he wrote in which this tortuosity was first pointed out he ascribed it to a senile change because all his patients had been elderly, but since then he had met with it repeatedly in young children.

Dr. CONNALL said one often met with the condition in children, and from its size he thought it was in some of these suggestive of the ascending pharyngeal. In the present case Dr. Adam's description was probably correct.

THE FRENCH SOCIETY OF LARYNGOLOGY, OTOLOGY AND RHINOLOGY.

May, 1911.

President : E. ESCAT (Toulouse).

Reported by A. R. SALAMO (Paris).

(Continued from p. 341.)

Some Cases of Endoscopy and Surgery of the Respiratory Passages and Œsophagus.—**Sargnon** (Paris).—The author related the results of his laryngostomies. All his patients save one were now decannulised. The operation is especially indicated in cases of marked cicatricial stenosis, recurring papillomata, and even in laryngo-scleroma. He had seen two cases of intra-bronchial foreign bodies (an eyelet, and the remains of a haricot bean, both impacted in left bronchi). In laryngo-tracheal surgery he generally adopted local anaesthesia with cocaine (Schleich's method). In two cases of laryngectomy, operated on by Bérard, local anaesthesia gave a perfect result. The author has observed a series of cases of spasm, cicatricial stenosis, and two serious cases of foreign bodies of the œsophagus which necessitated an external intervention.

VIOLLET (Paris) had seen a case of recurrent papillomata treated by formol inhalation radically cured.

Severe Angina in a Child, recurring five or six times a Year, cured by Removal of His's Folds and Tonsils.—**Paul Viollet** (Paris).—A little girl, aged five, since the age of eight months had been attacked many times with febrile sore throat, the temperature being 39·5° C. to 40° C. The tonsils and adenoids were operated on May, 1908, but in spite of this the angina recurred. To free the patient completely from further trouble the speaker advised operating again radically. This was carried out in July, 1910. His's folds were carefully divided and the tonsillar recesses cleared out; since then the angina has disappeared. This case bears out well the ætiological importance ascribed by Chatellier to His's folds in the genesis of recurrent quinsy.

Frontal Sinusitis, Unilateral or Bilateral, cured by Endo-nasal Treatment.—**Trétrop** (Antwerp).—The author considers that the two factors maintaining chronicity in this affection are, difficulty of drainage, and absence of oxygen in the sinusal cavity favouring the development of anaërobæ. The erectile tissue of the turbinated bodies being contractile as a result of remote influence, the infundibulum can be rendered patent by medicamental reflex action. Pain in sinusitis often disappears after painting the region of the infundibulum with cocaine-adrenalin. Peroxide of hydrogen, protargol and coryfin have given the author good results. For catheterisation and lavage of the sinus Trétrop has used a long, fine silver cannula attached to a Pravaz syringe. The author cited some cases of frontal sinusitis cured by these conservative methods.

Five Fatal Cases of Otitic Meningitis.—**Labarriére** (Amiens).—Three cases out of five were operated on. Two patients died in forty-eight hours from acute meningitis, secondary to acute otitis treated by early paracentesis; a third expired a month after having undergone a simple mastoid trephining, a fourth after a similar intervention, and the fifth a fortnight after the radical mastoid operation. Lumbar puncture revealed the presence of streptococci in the cerebro-spinal fluid. The author admits the curability of serous meningitis and intra-cranial abscess, but doubts the efficacy of surgical treatment in true suppurative meningitis.

Labyrinthitis; Labyrinthectomy.—**Bourguet** (Toulouse).—The speaker introduced remarks on four patients who suffered from suppuration of the labyrinth. All four had been operated on according to his technique, which he illustrated by drawings from nature. The method of procedure consisted in removing the external, superior, and posterior semicircular canals and penetrating behind the facial aqueduct into the vestibule. To carry this out he uses burrs driven by an electric motor. Lastly, removal of the cochlea was effected with the chisel.

Revolver Bullet Impacted in the Left External Auditory Meatus; Extraction after Twenty-five years.—**A. Raoult** (Nancy).—This concerned a man complaining of a discharge from the ear, accompanied by pain recurring from time to time. The author found a large polypus obstructing the meatus. Attempts at removal proving painful, in spite of local anæsthesia, the operation was deferred till next day to be performed under chloroform. During the second intervention, after curettage of the polyp, Raoult felt a hard irregular body, which he experienced difficulty in extracting. It was a misshapen bullet, situated at the entrance of the osseous meatus. On recovering from the anæsthetic the patient said he had shot himself in the mouth twenty-five years previously. The point of entry of the projectile could be seen on the left side of the palate. At the Lariboisière Hospital, where he had been treated, the bullet could not be found. Later he noticed a discharge from the ear, and on the strength of what he had been told at the hospital he believed that the bullet had disappeared, and that there was no connection between the shooting and the otorrhœa. He attended a clinic, where they removed the polyp, but failed to recognise the presence of a foreign body. The bullet had travelled between the pterygoids, after having doubtlessly shattered the lower extremity of the internal pterygoid plate, then between the internal carotid and the vertical ramus of the mandible without touching them, and finally penetrated the tympanic plate.

Suppuration of the Middle Ear cured by Anti-syphilitic Treatment.—**H. Bourgeois** (Paris).—Although syphilitic manifestations of the internal and external ear are well understood, specific disease of the middle ear is obscure. Ulcerations of the naso-pharynx are frequently accompanied by simple catarrh or suppurative lesions of the tympanum; everything suggests that the latter are often secondary to infections in the neighbourhood; there must, however, be some cases where the middle ear is primarily affected. The author related the history of a patient, having no lesion of the nose or naso-pharynx, who was treated without avail by the usual methods for more than three months, but was cured of his otorrhœa in a fortnight by combined local and specific remedies. The reasons which induced the author to undertake this

treatment were: the absolute indolence of the affection from the first; the appearance of a second perforation during treatment. Insidiousness and multiplicity of perforations are characteristic of tubercular middle-ear disease, but this patient was by no means tubercular; the discharge was slight, and the otitis did not present the progressive destructive course which is always observed when due to Koch's bacillus.

LAFITTE-DUPONT (Bordeaux) had seen a relapsing suppurative otitis in a hereditary syphilitic patient perfectly cured by specific treatment.

Anatomical and Clinical Evolution of a Case of Leucoplakia Laryngis.—**Paul Laurens** (Paris).—This case, shown in 1908 (then of ten years' duration), has from a clinical point of view undergone little change since. Whilst up to 1909 repeated histological examinations revealed pure leucoplakia, the case was now, as the last examinations by Nathan showed, one of incipient epitheliomatous transformation.

CASTEX (Paris) had recently seen a patient in a state of violent dyspnoea, who stated that he had suffered from laryngeal disease for twelve years. On examination a leucoplakic mass was discovered. Chronic laryngeal syphilis with condyloma and leucoplakia was diagnosed. He intended performing tracheotomy should suffocation supervene.

LAFITTE-DUPONT (Bordeaux): From a diagnostic point of view too much reliance must not be placed on the histological examination, for the features of leucoplakia are not at present very well defined.

PAUL LAURENS (Paris): It is indispensable that several histological examinations be made.

High-frequency Currents in Oto-rhino-laryngology.—**Castex** (Paris).—In ozæna this method has failed three times and succeeded seven. Naturally it is more efficacious when the affection is recent and mild in character. It would be useless to resort to it in very marked atrophic rhinitis. When it is going to be successful improvement is manifest from the three or four first sittings. Afterwards all the characteristic features of the affection become attenuated. Crusts no longer smell offensively, and are replaced by feebly adherent mucus. It is not requisite to increase the sittings beyond twelve or fifteen, for the mucosa becomes so tender that the treatment can be no longer tolerated. In rhinorrhœa he has had one uncertain result, and four successes when other known remedies had failed. The results are more rapid than in ozæna. After the first sittings discharge and sneezing diminish. The current probably acts by virtue of its hypotensive effect. In the case of the ears results have been negative, even for tinnitus. Is this because the current acts too remotely on the fibroid changes? To sum up these observations, high-frequency currents are inefficacious in otosclerosis, useful in ozæna, and very much to be recommended in rhinorrhœa.

BOURGOIS (Paris) obtained good results in spasmodic rhinitis from high-frequency currents applied locally and generally.

Contribution to the Diagnosis of Luc's Osteo-periostitis.—**H. Abouker** (Algiers).—Some years ago he saw a child suffering from otitis media, with a sub-periosteal abscess, which he opened. Trephining the mastoid was proposed. The child returned cured. The case led him to peruse again Luc's first publications on temporal osteo-periostitis of otitic origin. Since then he had been able to diagnose several cases of it, which recovered after an incision into the temporal fossa, the meatus or

the tympanum. The only peculiarity he had to note was that in two cases there was a discharge of pus from the corresponding nasal fossa. A young man treated four months ago could induce this discharge at pleasure by slight massage of the temporal region. He had the history of these patients in his mind when six months ago he saw a man, whom he still had under treatment. He had a large temporal abscess with pain situated over the antrum, and sagging of the postero-superior wall of the meatus, the result of an acute otitis, which had entirely subsided at the time of examination. He believed it to be a case of osteo-periostitis. The temporal abscess was evacuated, and as a precaution the incision was prolonged as far as the mastoid apex. The periosteum was healthy. No pain was caused by percussion over the antral regions. Six weeks later he returned with acute mastoiditis and a fistula, which still remains. Mastoiditis with temporal abscess may be very difficult to distinguish from simple osteo-periostitis; sometimes the course of the disease alone enables one to differentiate the two affections.

Some Methods for covering Wounds as an Aid in Autoplastics.—**Gault** (Dijon).—In the case of malignant tumours of the face and neck autoplasic procedures leave unsightly linear cicatrices, which it is one's duty to reduce to a minimum. With this object the following methods have been of service in some cases: (1) To supplement the usual approximation of the flaps, with stretching the skin by a series of smart tractions, which rupture or distend the elastic fibres, and allow a gain of about a fifth or sixth of the length of the flaps. This is the outcome of observations on those operated and from research in the dissecting room. (2) To avoid retraction of the skin afterwards by supporting the sutures with the application of collodion—a procedure too much neglected. (3) Lastly, rather than resort to a number of supplementary incisions, to fill up if necessary by epidermisation. In this connection no epidermising agent has given us such good results as a well-known topical agent of the old pharmacopœia, Vigo's plaster.

Meningitis following a Radical Mastoid Operation. Should the Cerebellar Fossa be opened in Suppurative Labyrinthitis? **H. Abouker** (Algiers).—A girl, aged thirteen, with left otorrhœa from infancy, was attacked with mastoiditis and suppurative labyrinthitis, with vertigo and staggering. No nystagmus was induced by rotation or irrigation. Galvanism caused inclination and rotation of the head to the diseased side. Spontaneous nystagmus to the healthy side. Bone-conduction *nil*. An ordinary radical mastoid operation was performed. Some hours afterwards she became restless. Kernig's sign was present. The cerebro-spinal fluid contained polynuclear leucocytes and streptococci. In spite of a free opening of the labyrinth and cerebellar fossa, death ensued on the fourth day. A consideration of the case justifies one in incriminating traumatism by the gouge and mallet, which must have broken down some intra-labyrinthine adhesions. The conclusions which arise from this clinical observation are the following: (1) In chronic suppuration of the middle ear, every operation, even if performed *per vias naturales*, should be deferred until a complete examination of the various labyrinth reactions of both ears has been made. (2) In all cases of labyrinthitis, lumbar puncture, as indispensable as the labyrinth reactions, ought likewise to precede all operative treatment and instrumental exploration on the middle ear. (3) If the cerebro-spinal fluid be normal, it is nevertheless necessary to explore the

cerebellar dura mater, so as to be prepared to face forthwith every eventuality. (4) If the cerebro-spinal fluid be abnormal, one must choose between complete abstention, or opening the cranium at once. Operative abstention, or rather expectation with medical treatment of the meningitis, is warrantable if the osseous lesions appear to show a tendency to spontaneous resolution. On the contrary, if the osseous lesions appear progressive, or if waiting seems more dangerous than surgical intervention, the radical operation must be performed, only ceasing after complete drainage of the cerebral or cerebellar fossa. (5) In all trephining of the petrous bone, as elsewhere on the cranium, the ideal instrument, much less dangerous than the gouge and mallet, is the burr driven by a motor.

H. Clayton Fox (Trans.).

PROCEEDINGS OF THE AMERICAN LARYNGOLOGICAL, RHINOLOGICAL, AND OTOLOGICAL SOCIETY.

Seventeenth Annual Meeting, Atlantic City, June 1, 2, and 3, 1911.

Report by DR. L. M. INGRAM.

Thursday, June 1, 1911.

(Continued from p. 293.)

The So-called Conservative Mastoid Operations, with a Description of the Technique of Heath, Bondy and Siebenmann.—Dr. George L. Richards (Fall River).—Apart from cases in which the radical mastoid operation is definitely indicated, there are many cases of chronic suppuration where the greater portion of the drum membrane is still present and the ossicular chain intact, but where the drainage is not sufficiently good to bring about cessation of the discharge. Many of these cases have a fair degree of hearing, and the operator hesitates to subject the patient to a severe operation for fear of further injury to the hearing. In such cases operated upon radically, it will frequently be found that the source of the infection is in a diseased antrum, the lining membrane of which is secreting muco-pus, which drains out by way of the attic and tympanic cavity. Ossiculectomy in such cases often fails to stop the discharge, and does not conserve the hearing. In order to overcome these difficulties Mr. Charles J. Heath took up the problems of draining the antrum and at the same time saving the drum membrane and ossicles, with the idea of not only curing the pathological process, but saving and even improving the hearing. The so-called Heath operation was devised for this purpose. The procedure is described in detail in the paper. This method is followed in subacute cases, cholesteatoma being considered a distinct contra-indication. Bondy, an assistant in the clinic of Prof. Urbantschitsch, devised an operation designed to effect somewhat the same result as that aimed at by Heath. Unlike Heath, however, he operates only on chronic cases, including among them cholesteatoma. The purpose of this operation is the protection or conservation of the drum membrane and the ossicles; hence it is necessary that the ossicles be neither extracted nor disturbed

in their relationship. At the same time, in order to stop the discharge, it is necessary that the middle-ear cavity be drained as freely as possible, not only for present purposes, but in case of further operative procedure. The details of the methods were described. The operation of Siebenmann cannot properly be called a conservative operation, in the author's opinion, but rather a conservative type of radical operation. The operation performed by him differs from the radical mastoid operation as ordinarily performed, in that all he does is to remove as much of the bone of the mastoid region and attic as is necessary to make all parts accessible through the external canal, together with the ossicles and the drum membrane. The curette is not used, as Siebenmann thinks nothing is gained in time, the risk to the patient is increased, and the prevention of the re-formation of the cholesteatoma is not attained. An essential part of this operation is the flap, which he described in detail. The choice of one of these operations must depend upon the individual case.

Dr. ARTHUR B. DUEL (New York City) said that experience had taught him more and more each year that many cases could be cured by drainage from the middle ear through a posterior operation, leaving the drum membrane and ossicles intact. Some method of posterior drainage leaving these structures in place would succeed in reducing the number of cases of radical operation by one half.

Dr. W. SOHIER BRYANT (New York City) said: We have heard discussed the technique and details of the modified radical operation with the preservation of the drum membrane and the ossicles, which has become almost universally identified with the name of Charles J. Heath, the English author who is generally accredited with being its originator. It may be of some interest in this connection to know that to America rather than to England belongs the credit of priority in using and demonstrating this improved method of operating for chronic otorrhea. As early as November 28, 1905, it was my privilege to present at the meeting of the New York Otological Society a case upon whom the operation had been successfully performed on July 27, 1905. An account of this operation appeared in the *Archives of Otology*, February, 1906, while Heath's¹ article was not published in the *Lancet* until August 11 of that year (1906). Heath's work was done in June, 1906, while mine dates back to 1905. It was furthermore my pleasure to make two other presentations of the operation, both of which antedate any recorded work of Heath's: (a) At the meeting of the New York Otological Society, January 23, 1906.² (b) At the meeting of the Section on Otology, New York Academy of Medicine, April 12, 1906.³ I want to distinguish between the conservative radical and the modified radical mastoid operation. In the conservative radical the ordinary Schwartze-Stacke operation is carried as far as removing the ossicles and the tympanic membrane, but the inner tympanic wall is not curetted, nor is the Eustachian tube closed. In the modified radical operation the ossicles and the drum membrane are retained. I performed a modified radical operation on September 14,

¹ Heath, Charles J., "The Cure of Chronic Suppuration of the Middle Ear without Removal of the Drum or Ossicles or the Loss of Hearing," *The Lancet*, London, August 11, 1906.

² *Report of Transactions of New York Otological Society*, meeting, January 23, 1906. Presentation of a case of mastoiditis, Bryant, *Archives of Otology*, vol. xxxv, No. 2, April, 1906, p. 131.

³ *Report of Transactions of the Section on Otology, New York Academy of Medicine*, April 12, 1906. Presentation of a case of modified radical operation, Bryant. *Archives of Otology*, vol. xxxv, No. 4, August, 1906, pp. 398-400.

1904. The case was presented before the New York Academy of Medicine, Otological Society, on March 9, 1905, and appears in the *Archives of Otolaryngology*, vol. xxxiv, No. 3, June, 1905.¹

Dr. J. A. STUCKY had performed the Heath operation three times and in each case had subsequently to do the radical operation. He did not believe that any results could be obtained from the Heath operation that could not be got from a thoroughly performed classical operation. He had examined some of Heath's patients from two months to three years after operation. Two cases he had examined twice. In two the results were ideal, in the others the drum membrane was still soggy.

Dr. FRANK ALLPORT felt as Dr. Stucky, Dr. Barnhill and others do, that as a rule the Heath operation is merely a makeshift: it does not get at the seat of the trouble. He did not mean to say that there are not some cases which will be cured by the Heath operation, but the question is, is it a wise and proper surgical procedure in the vast majority of cases of chronic purulent otorrhœa of an intractable nature? Almost all of these cases are accompanied by necrosis of the antrum, middle ear, ossicles, attic, and usually the mastoid cells down to the tip. The Heath operation does not interfere with the attic, or the ossicles, or the tympanic walls, or the end mastoid cells. The operation practically merely consists in opening the antrum and thereafter depending upon irrigation and drainage to complete the cure. The operation, therefore, cannot appeal to one's surgical sense, and can only cure a few cases where operations of any kind are indicated. It may possibly be that this operation should be tried in exceptional cases, such as those mentioned by Dr. Beck, in which both ears are diseased, or in children where we can depend upon the natural resources of the body to go a long way towards the production of a favourable result. Even in those cases, however, the wisdom of the Heath operation is not by any means established. Its position seems to be getting less secure as time and experience outline the boundaries of its usefulness. Dr. Allport felt that after all, if an operation is to be done at all it is better to do thorough work to get at the real seat of the trouble and to perform the classical radical mastoid operation. He was interested to hear what Dr. Stucky had to say about his ossiculectomies. He remembered that some years ago Dr. Stucky spoke before this Society as an advocate for ossiculectomy in chronic purulent otorrhœa. He remembered that about a year ago Dr. Stucky declared again that he had been compelled to subsequently supplement all of these ossiculectomies by the radical mastoid operation. Dr. Stucky also some years ago was quite warm in his praise of the Heath operation, and now admitted that most of these operations have had to be re-operated by the radical mastoid operation. The speaker believed that if everyone were as honest as Dr. Stucky, the Heath operation by this time would be considered an unwise procedure and would be relegated to oblivion. The classical radical mastoid operation, in the speaker's opinion, is the operation, and all who try to escape it will be compelled, sooner or later, to return to it, unless some procedure which we know not of at the present time is discovered. Referring to the flap, he said that he believed the simplest and the best one that can be made is the Panse L-flap instead of the Panse T-flap. In the Panse L-flap the incision along the diameter of the meatus is made as close to the bottom of the meatus as possible, and all of the meatal tissue is thereby thrown

¹ Report of Transactions of the New York Otological Society, meeting, November 28, 1905. Presentation of case of modified radical operation, Bryant, *Archives of Otolaryngology*, vol. xxxv, No. 1, February, 1906, p. 38.

into the upper flap, which is unquestionably the region where the transplantation of tissue is most desirable. This flap can be beautifully and simply made by using the meatal divulsors, which are for sale by Mueller, Hardy and others. By forcing the blades of the divulsors apart the meatus is put on the stretch, and the lower arm of the divulsors being used as a guide for the knife, the incision is easily and accurately made.

Recent Advances in the Treatment of Diseases of the Eustachian Tube.

(a) **The Pharyngeal Orifice of the Eustachian Tube, with a Demonstration of a Speculum and other Instruments for the Direct Examination and Treatment thereof.**—Dr. Sidney Yankauer (New York City) described his direct naso-pharyngeal speculum and intra-tubal speculum. He first experimented with straight tubes, but finding that these caused injury to the soft palate, which was to be scrupulously avoided, he abandoned the straight tubes. After studying the mathematics of the situation he devised the instrument which is described in the paper. The work of Gyergyai in the direct examination of the naso-pharynx by means of straight tubes was reviewed. The author's speculum is so constructed that the anterior wall of that part of the instrument which enters the naso-pharynx comes in line with the posterior wall of that part which presses against the angle of the mouth, so that it forms a lever having a thickness corresponding to the thickness of the meatal opening. The parts are therefore brought into view with the least possible amount of pressure on the soft palate, so that injury to this structure is entirely avoided. Cocaine is used for the first few introductions of the speculum, and in sensitive patients each time. The patient sits upright in front of the operator. One side of the naso-pharynx is examined at a time. Attention was called to the difference in appearance and relationship of organs examined by the direct method and by means of reflecting instruments. The anatomical structures in the neighbourhood of the pharyngeal orifice and their behaviour under physiological and pathological conditions were discussed. As the direction of the speculum corresponds to the direction of the axis of the tube, it becomes possible to insert straight instruments into the tube for the purpose of investigation or treatment. If the interior be cocaineised, it is possible to insert a short, straight tube for about $1\frac{1}{2}$ cm. into the Eustachian tube. The intra-tubal speculum is used for this purpose. Pathological findings in and about the fossa of Rosenmüller were next discussed. Six cases were cited in which there was excessive secretion in the fossa of Rosenmüller. All the patients complained of marked tinnitus aurium, but not of deafness. The proximity of the fossa of Rosenmüller to the carotid artery, to the isthmus of the Eustachian tube, and to the labyrinth capsule, led to the assumption that the head noises were due to the breaking of air-bubbles or to the movement of the mucus within the fossa. The absence of inflammation in the fossa and the absence of all evidence of middle-ear disease, the drum membrane being normal and the Eustachian tube patent in each case, further substantiated this view. The mucus was removed by the irrigation of the fossa, either through the speculum with a straight cannula, or by means of the old-fashioned post-nasal syringe. After the fossa was thoroughly cleansed out, an application of 5 or 10 per cent. solution of nitrate of silver was made to the fossa through the speculum. In four of the six cases the excessive secretion disappeared after a few treatments, given every other

day. With the disappearance of the secretion the head noises ceased completely. In two of these four cases relief was permanent. In the other two the patients returned several times with renewed secretion in the fossa. Relief was prompt and decided in the four cases, the tinnitus being markedly diminished after the first treatment. In the remaining two of the six cases cited the secretion continued in spite of the treatment, and the tinnitus was not diminished.

(b) **Examination and Treatment of the Eustachian Tube by the Aid of the Naso-Pharyngoscope.**—Dr. Edgar M. Holmes presented his naso-pharyngoscope, and gave a *résumé* of the results of continued study of the pathological conditions affecting the Eustachian tube and their direct treatment by means of this instrument. The technique of examination is simple, and is successful in 99 per cent. of all cases. The technique necessary for the various methods of treatment is not as simple as that for examination, but with ordinary skill it is soon acquired. The anatomy of the Eustachian tube varies as much as that of the nose and requires considerable study, as one must determine what variations are within physiological limits and what are really pathological. He had examined with the naso-pharyngoscope over 900 cases, and had classified 409 cases. He had also examined 64 additional cases from the eye clinic, who gave no symptoms of catarrh of the nose or ear. Among the pathological conditions found were acute and chronic, purulent and non-purulent inflammation, hypertrophy and atrophy of the mucous membranes, hypertrophy of the posterior ends of the turbinate, adenoid growth, polypi, epi-pharyngeal abscess, syphilitic lesions. There were also found changes due to cardiac, renal, gastro-intestinal and lithæmic causes. The most important is the associated ear pathology. The general prognosis of the local pathology is good. Cases of local atrophy have in some instances shown improvement, yet are not cured. Marked improvement of the epi-pharynx frequently follows removal of the hypertrophied posterior turbinate. The results of treatment in cases of associated acute secretive middle ear trouble are most gratifying. Thirty-one cases of acute secretive middle ear were given in tabular form. The majority of these were relieved of distressing symptoms by his method of treatment, and nearly all were saved a discharging ear. The convalescence was also much shorter than in similar cases when paracentesis is performed. There were only two cases which were not relieved. In closing, the reader of the paper emphasised the importance of being able to easily and thoroughly examine the epipharynx and to treat any pathological conditions by the aid of vision.

Dr. W. SOHIER BRYANT said: I find that the old-fashioned posterior rhinoscopic method of examining the mouth of the Eustachian tube with the mirror is still useful in the majority of cases. As you know, however, at times this method is neither satisfactory nor practicable. A number of adaptations of the cystoscope have been described for exact naso-pharyngoscopy and for use in cases where the mirror is unsatisfactory. The instruments are passed through the nose, as Valentin's salpingoscope,¹ or through the mouth, as Hay's pharyngoscope.² The Holmes model of

¹ Valentin, Demonstration of instrument. Meeting Medizinisch-pharmazeutischer Bezirksverein Bern, December 23, 1902, *Correspondenz-Blatt f. Schweizer Aerzte*, xxxiii, No. 12, 1903, June 15, 1903, pp. 417-418.

² Hays, Harols, "The Pharyngoscope: A New Electrical Instrument for Examination of the Pharynx, Eustachian Tubes and Larynx," *Laryngoscope*, St. Louis, 1909, xix, p. 528.

the Valentin salpingoscope is the best I have seen. I have found Hay's pharyngoscope serviceable in cases where obstruction of the nose prevents passage of the salpingoscope. The trans-nasal method has one great advantage over all methods *via* the mouth in that it permits inspection of the Eustachian orifice in normal motion, which cannot be observed satisfactorily by the other methods. Von Gyergyai's and Dr. Yankauer's¹ instruments are based on quite a different mechanical principle and belong to another class. In cases where the palatal conformation is sufficiently ample to permit their use, they give direct access to the parts and consequently make easy manipulation possible. Dr. Bryant further said: While in the greater number of cases of middle-ear disease inspection of the pharyngeal mouth of the tube adds but little to the diagnosis, in the lesser number of cases such inspection is of considerable importance, because it reveals unsuspected conditions and fixes the details of previous assumptions. I have found such inspection especially advantageous in chronic obstruction of the Eustachian tube, where the cause cannot well be determined without direct inspection of the orifice of the tube. The inspection enables us to determine the seat and nature of the fundamental cause of obstruction, whether in the tube itself, in the fossa of Rosenmüller, the mucous membrane surrounding the tube, the posterior ends of the turbinates, or the adenoid tissue. A doubtful diagnosis is made positive, and sometimes serious unsuspected conditions, such as the existence of malignant disease, are brought to light. Here again, said Dr. Bryant, in the majority of cases there is no need to know the exact condition existing in the immediate neighbourhood of the mouth of the tube, for our knowledge of the general condition is sufficient to enable us to obtain satisfactory results from treatment. In the minority of cases, however, the local conditions differ from the general, and an inspection of the mouth of the tube enables us to determine the local change that is interfering with the function of the tube, thus putting us in a position to correct it. By means of the salpingoscope or the pharyngoscope we can ensure the accuracy of local treatment—the application of reagents, operative procedures, or catheterisation of the tube. We are thus enabled to apply with the greatest benefit fulguration or cauterisation, to break adhesions, and to remove redundant tissue.

Dr. THOMAS J. HARRIS said that it had been a revelation to him to realise how much can be seen by direct examination of the Eustachian tube. He had also been surprised to learn of the variety of conditions which affect these parts, and of how much can be accomplished in the treatment thereof by means of direct inspection. He asked Dr. Yankauer if the intractable cases to which he referred are really unmanageable, or if the difficulties which they present may be overcome by practice. He would be glad if the gentlemen, in closing the discussion, would tell which is the better method, and what are the advantages of one method over the other.

Dr. SIDNEY YANKAUER, in closing the discussion, said he had never used enough pressure to injure the soft palate of the speculum. The amount of pressure used can be very easily gauged, and it is unnecessary to exert sufficient pressure to cause any traumatism. When he used the straight tubes he had to pull the palate so much further forward that he

¹ Von Gyergyai, A., "Demonstration einer neuen direkten Methode zur Untersuchung und Behandlung der Pharyngealen Tubenmundung und des Innenraumes der Ohrtrumpete," *Versammlung der Deutsch. Otolog. Gesellschaft in Dresden*, May 13 and 14, 1910; abstract, *Inter. Zentralblatt f. Ohrenheilkunde*, vol. viii, No. 10, 1910, p. 449.

did sometimes injure it, but since he had been employing this speculum this difficulty had been obviated. Dr. Holmes's cases of acute otitis media were particularly interesting. He had attempted to treat such cases in a similar manner, making applications of cocaine and adrenalin, and of argyrol, to the inside of the tube. The result of his method of treatment was immediate cessation of the symptoms and recession of the drum, lasting from six to eight hours. In cases seen early, where bulging is not very pronounced, and where it could not be determined whether the case is going on to suppuration or whether it is a simple catarrhal inflammation, relief was permanent. Where the symptoms were very pronounced relief was only temporary. In a few cases the pain did not return, but the bulging of the drum membrane remained. Such patients were willing to stand the deafness as they were free from the pain, and they perforated in forty-eight hours. These cases healed with a distinct round defect in the drum membrane, closed with thin scar-tissue, which is more easily moved with the pneumatic speculum than the remainder of the drum membrane. He felt that such injury to the drum membrane caused a loss of hearing, and so he had ceased to treat acute otitis media by this method. As to the comparison of his method of examination and that of Dr. Holmes, as suggested by Dr. Harris, none was to be made, each being supplementary to the other. It is quite important in many instances to look into the fossa of Rosenmüller with the salpingoscope, but until one has used the direct speculum it is difficult to realise what a place this fossa is. Sometimes it appears as a mere slit with reflected light, but when the direct speculum is put in it is found to be quite deep. The treatment of the fossa of Rosenmüller is quite simple, and is carried out with the speculum. The objection on the part of the patients to the speculum is of no consequence. They say that it does not hurt, but is disagreeable on account of the gagging. One patient, a young man, who fainted the first time the speaker tried to pass the Eustachian catheter through the nose, after a few trials permitted him to pass the direct speculum without cocaine.

Dr. HOLMES, in closing the discussion, said Dr. Yaukauer's statement about not being able to see the fossa of Rosenmüller was true of the pharyngoscope, but not of the speaker's instrument. The fossa can be seen in its normal condition, and can be operated upon when necessary. He said the salpingoscope of Balentyne was one effort in the right direction but it was not neatly designed. Patients do not object to the introduction and manipulation of the naso-pharyngoscope. He used it in a child two and a half years old. Children object to the light, so that it is better to introduce the instrument before lighting it. In his first fifty cases he had found one growth in the tube. He removed it and presented it at the Boston meeting of this Society, and he had seen but one growth in the tube since. In this series of almost 1000 cases this would be two-tenths per cent. These statistics were not convincing, and he simply gave them as he found them. In treating the tube by this method there is no staining with blood, as in the old method of treating the tube blindly. The secret of success with this method is the avoidance of traumatism to the tube. The instrument enables one to treat the tube easily unless there is deflection sufficient to require nasal operation.

Abstracts.

LARYNX.

Egidi, Prof. F., (Rome).—The Non-surgical Treatment of Malignant Laryngeal Tumours. "Boll. d. Mal. d'Orrech. Gola e Nas.," Florence, January, 1912, p. 1.

The author commences by a declaration of faith in the surgical treatment of suitable cases of malignant disease of the larynx and that he is an enthusiast for laryngectomy in view of the brilliant results obtained by him in many cases. He accordingly limits the adoption of non-surgical methods to those cases in which, though everything is favourable for operation, the patient decisively refuses his consent. Such cases as a rule end miserably after, perhaps, a tardy consent to tracheotomy. Prof. Egidi has had the opportunity of trying the methods suggested by the experiments and conclusions of Fichera on the genesis and treatment of malignant tumours. Those views are now well known, and have been advocated also by such writers as Seitz, Tuffier, Jones, Dising, Wood, Ross and others. Briefly, they are that neoplasms arise at the time when the cell proliferation undergoes a change in subjects in whom there is an oncogenous disequilibrium, that is, in whom the factors which excite development are no longer in proportion to the restrainers, or cytolytic elements. Attempts have been made by those writers to supply the deficient elements by means of organisms (embryonic) in which active increase is held within normal limits by tissues rich in isoferments. The material was prepared by incubating fragments of foetal tissue in physiological solution for from fifteen to twenty days. The injections were given from once to three times a week, and the dose varied from $\frac{1}{2}$ to 3 c.c. according to the effect.

Particulars are given under all reserve of two cases: (1) A man, aged seventy-one, with epithelioma and metastases. After one month's treatment (September, 1909) the lesions completely disappeared and the improvement was maintained at the time of writing. (2) A man, aged fifty-two, with epithelioma of both vocal cords; microscopic confirmation. Serious laryngeal reaction after the first intergluteal injection. Injections continued, however, and rapid disappearance of neoplasm followed. In spite of advice patient, a clergyman, returned to his duties and even resumed preaching. He continued well until two successive attacks of influenza were followed by recurrence of the tumour and grave dyspnoea. Tracheotomy was performed, but the patient died of heart failure two days afterwards.

James Donelan.

NOSE.

Broek, W. (Erlangen).—Papilloma of the Nose. "Archiv. für Laryngol.," vol. xxvi, Part I.

Hopman distinguished two varieties of nasal papilloma, the hard, covered with squamous epithelium, and the soft, covered with cylindrical epithelium. This division cannot, in the author's opinion, be upheld, and has led to some confusion. He considers the variety of the covering epithelium to be more or less a matter of chance, and, indeed, in several of the reported cases both kinds of epithelium have occurred together.

He would divide the growths into the two following groups: (1) Tumours arising near the nasal entrance from the mucous membrane of the septum, the floor of the nose, or the inferior turbinal. (2) Tumours arising chiefly from the middle tubinal and ethmoid. Growths belonging to the first group are scarcely ever larger than a walnut, are usually solitary, and, though they may recur after removal, never attain the size and extent of those of the second group. The latter, on the other hand, often fill the entire nasal cavity, displace the septum, cause absorption of bone and cartilage, and grow into neighbouring cavities. They present in fact a clinical malignity similar to that displayed by naso-pharyngeal fibromata. The case which the writer reports belonged to group 2.

Thomas Guthrie.

Ricardo, Botey (Barcelona).—A Case of Pure Malignant Naso-maxillary Myxoma, with Fronto-orbital and Meningeal Extension: Atypical Resection of the Maxilla and Ethmoid. "*Annales des Mal. de l'Oreille, du Larynx, du Nez, et du Pharynx*," vol. xxxvii, No. 6.

On August 29, 1910, a man, aged sixty-three, consulted the author for right-sided nasal obstruction of some months' duration, with pain in the jaw radiating to the orbit. The right fossa was occupied by more or less pedunculated growths resembling so-called mucous polypi; on removing some of them the writer was struck by their rose colour, firmness of consistence, and the extent of hæmorrhage. The right frontal and maxillary sinuses were quite dull on transillumination. Trans-canine exploratory puncture, proposed with a view to radical intervention, was refused by the patient. The man disappeared for four months. Seen again in January, 1911, he had on the right side complete nasal obstruction, exophthalmos and absolute blindness with bulging at the inner canthus and canine fossa. Cavum free. Palatine arch and alveolar process normal. Epistaxis frequent. Exploration *viâ* the canine fossa revealed the maxillary antrum filled with tissue similar to that occupying the nasal fossa. The neoplasm examined by Dr. Calleja was pronounced to be pure myxoma.

January 3, 1911: Operation. Anæsthetic, chloroform. With the patient in Rose's position and cæcum plugged, an incision was made from the inner third of the right eyebrow along the inner margin of the orbit and the naso-facial sulcus, terminating by curving around the *alæ nasi*. The soft tissues were then detached from the dorsum of the nose, nasal processes of maxilla and inner wall of the orbit. The growth had destroyed the lachrymal bone, *os planum*, a large portion of the orbital floor, the ethmoidal cells as far as the cribriform plate, and the frontal and sphenoidal sinuses, exposing the *dura mater* in places. The dorsum of the nose and base of the ascending process were cut away with a chisel and the entire outer wall of the nasal fossa, which had been transformed into neoplastic tissue, was removed. The *dura* was seen to be red and fungating, and the apex of the orbit was reached after enucleating the eye and infiltrating tissue. The sphenoidal and maxillary sinuses were finally cleared of growth and the operation was concluded by swabbing out the operated cavity and packing with gauze. Skin suturing by Michel's method. The extirpated tissue was again examined by Dr. Calleja and proved to be myxoma. Two weeks later recurrence took place, and death from meningo-encephalitis ensued two and a half months after the intervention. Amongst the author's numerous colleagues communicated with on the subject only Hajek and Chiari had observed

or operated for pure nasal myxoma. Hajek's case was one of pure naevoid myxoma arising in the sphenoid, extending thence by infiltration to the roof of the ethmoidal labyrinth and absorbing the cranial base at several points. Blindness and exophthalmos followed. The growth ran a slow course and was unattended with metastasis. Patient died of generalised tuberculosis. Chiari operated on a case of pure nasal myxoma. The growth, the size of a nut and pedunculated, sprang from the septum. The author has failed to find any record of such cases in rhinological literature, but mentions the fact that Cornil and Ranvier cite cases of pure myxoma clinically malignant, occurring in other regions, observed by Virchow, Butlin, Brault, G. Simon and Raffin. The writer feels justified in concluding that his case is almost unique, and that pure myxoma of the nasal fossa is excessively rare and extremely malignant.

H. Clayton Fox.

Pirie, J. H. Harvey, and Skirving, A. A. Scott.—**Intra-nasal Carcinomata.** "Edin. Med. Journ.," October, 1911.

Intra-nasal malignant disease is distinctly rare. Sarcoma, endothelioma, and carcinoma all occur. Sarcoma is the commonest of the three forms, and occupies an intermediate position as regards malignancy; endothelioma is the rarest and the least malignant, while carcinoma is the most malignant.

In this paper a full account is given of the history, clinical appearances, and *post-mortem* findings of a case of carcinoma of the nose in a woman, aged forty-three. Symptoms, *i.e.* headache and vomiting, first began in November, 1908, and death occurred in February, 1910. At the *post-mortem* examination the disease was found to be very widespread in the nose and adjacent parts, extending down into the palate and up into the brain, involving accessory cavities, causing ptosis and proptosis of eyes. But in spite of this wide distribution and of the long duration no infection of glands in the neck could be found. This is not uncommon in cases of nasal carcinoma.

For details of the case, photographs of the patient during life, and of sections of the skull showing the position and extent of the tumour, and micro-photographs of the growth, the original paper must be read.

Arthur J. Hutchison.

Audibert (Marseilles).—**Ethmoidectomy for Epithelioma.** "Rev. Hebdom. de Laryngol., d'Otol. et de Rhinol.," February 24, 1912.

The patient in the case recorded was a man, aged fifty-five. He had always been subject to frequent attacks of cold in the nose. In the intervals between colds the nasal respiration was quite free. For the last six months obstruction of the right side of the nose had been gradually coming on, and for a month the obstruction had been complete. Patient did not suffer from headache or localised pain. There had never been epistaxis. There was no eye trouble on the right side, but he was under treatment for iritis in the left eye. This iritis was found to be quite an independent condition. His general health was excellent. The history of his previous health was satisfactory. He denied syphilis; his family history was also negative.

On examination there was no external deformity of the nose. Anterior rhinoscopy showed the right nasal fossa to be filled by a mass of cauliflower-like granulations, soft, friable, and bleeding easily on being

touched. Posterior rhinoscopy gave similar results. Examination by transillumination was negative. There was no glandular enlargement. On microscopic examination the granulations were found to be epitheliomatous.

Moure's operation was carried out (resection of the ascending process of the superior maxilla, the nasal bone and the nasal spine of the frontal) and the tumour removed piecemeal. The middle and superior turbinates were removed and the affected anterior ethmoidal cells cleared out down to the cribriform plate. The posterior portion of the septum was also resected and every suspicious area carefully curetted. Hæmorrhage was profuse, and called for repeated plugging throughout the operation.

The patient made a satisfactory recovery. Fifteen months afterwards there was no recurrence.

Dr. Audibert considers that in these cases the disease is best attacked by this route, giving as it does very free access, and diminishing therefore the chances of recurrence. The operation is, further, a safe one. There is no subsequent deformity of the nose if care is taken to leave a portion of the ascending process of the superior maxilla. The cicatrix is scarcely visible if the incision is made in the fold of skin between the nose and the cheek and if the sutures are inserted with a very small grip of skin and are removed early.

John M. Darling.

EAR.

Roure (Valence).—Some Considerations upon Zünd-Burguet's Method of Treatment in certain Cases of Deafness. "Arch. Internat. de Laryngol., d'Otol. et de Rhinol.," September-October, 1911.

The electrophonic method consists in the stimulation of the auditory apparatus by sounds of various degrees of intensity and pitch, with the expectation of thereby re-educating the ear for various sounds, and in particular for the human voice. It is then a sort of kinetic therapy, but differs from that of Delstanché in being a sonorous massage. Zünd-Burguet's method consists in the application to the ear of sonorous waves produced by metal plates put into vibration by electricity. The instrument has a low, middle and high register, five octaves in all. Each of these registers is constituted by a vibrating reed, the vibrating length of which is regulated by a platinum curseur, which regulates the height of the sound after the manner of the finger on the violin string. The current required to work the apparatus is one of six volts maximum. It would appear that the effect of the instrument is not merely one of mechanical massage, but is one which produces an actual trophic action. The author has seen the return of the cerumenous secretion and habitual diminution of tinnitus and improvement of hearing in cases of otosclerosis upon which massage alone seemed to have had no direct influence. If one concedes that an adhesive catarrh can be influenced by this method one can hardly refuse to allow for some modification, due to vascular trophic changes, of true sclerosis. The class of cases benefited thereby are adhesive otitis of nasal origin, post-suppurative adhesive catarrh and primary sclerosis. The author gives clinical notes of such cases where previous treatment along the ordinary lines has been unavailing, but where marked improvement at an earlier or later stage of the treatment has followed as a result of this method. Of these cases some have been completely cured and others greatly benefited.

Ap[ro]pos of the last case mentioned Roure says: "I do not think by any other treatment than this that it would be possible to improve to such an extent a 'sclerosis' aged forty-five years." Examination of the hearing is controlled in the following manner. Before the beginning of the treatment, and then once a fortnight, the hearing of each ear is noted for the watch, the pendulum; following that some words are read as the observer withdraws from the patient, the distance being carefully noted when the patient fails to repeat exactly three consecutive words, using the ordinary voice of conversation; or the electrophone itself may even be used for this purpose. Roure concludes with the following remarks: "The method of Zünd-Burguet is not infallible; not all the cases are successful, some are partially so, while others are entirely unsuccessful, but this need not discourage its further trial or discount its value." The abstractor has been informed by M. Zünd-Burguet that the best results are got with his method in specially selected cases, and that its general application outside those limits is bound to be disappointing, but that there is a particular group of conditions of deafness up to a certain duration in which it produces results that have hitherto been unattainable by other methods. Any intercurrent nasal or tubal conditions should certainly be treated. It is also desirable that the successful and unsuccessful cases should be published, and thus one can establish the indications and contra-indications of the method. "The electrophonic method is infinitely superior to the active treatment of adhesive catarrh, and constitutes above all a *veritable conquest of sclerosis*."

J. D. Lithgow.

Hall, Gaylord C.—Report of Cases operated on by the Yankauer Method. "Laryngoscope," October, 1911.

McCullagh, Samuel.—A Report of Eleven Cases operated on by the Yankauer Method for Closure of the Eustachian Tube. *Ibid.*, October, 1911.

In the first article the author lays down that cases in which otorrhea is the only symptom are the most suitable for this operation. As a result of the operation on seven ears in six patients he has obtained a complete cure in five; in one it was found to be impossible to enter the tube, and in one intra-cranial complications were present. In none of the successful cases has the tube reopened or the suppuration recurred, but the period since the operation is not mentioned. In the second article two of the cases had a persistent discharge after the performance of a radical mastoid operation, and of these one was cured and the other improved. Of the other nine cases three were cured, five improved, and one was unaltered. The factors in the selection of cases were the long duration of the discharge and the absence of any labyrinth symptoms. The author concludes that the operation is of considerable value, and should be tried before resorting to the radical mastoid operation unless some contra-indication is present.

A. J. Wright.

Hays, Harold, M.D.—The Yankauer Operation in the Treatment of Chronic Middle-ear Suppuration. "Laryngoscope," May, 1911.

An operation for closing the isthmus of the Eustachian tube in cases of chronic suppurative otitis media, thereby preventing re-infection from the naso-pharynx, was described by Dr. Sidney Yankauer in the *Laryngoscope* of July, 1910. In this original paper the result of the

operation in twenty-one cases was given. In thirteen cases a cure of the discharge was obtained, while in the other eight it was diminished. Dr. Hays has operated by this method on five cases with improvement in all, but without complete cessation of the discharge. After a preliminary irrigation of the tube and middle ear through a Eustachian catheter, anaesthesia is induced by the application of a solution of cocaine and adrenalin both into the middle ear and also directly to the Eustachian tube by a special applicator passed through the catheter. The tube is then explored with a special probe through the perforation in the membrane, and its calibre having been estimated the mucous membrane is removed from the walls of the isthmus of the tube down to the bone. The curettes consist of a fine curved shaft with a small hemispherical "mushroom" head, and three sizes are provided, the curette being passed, as was the probe, through the perforated drum and middle ear. The after-treatment consists of insufflations of iodoform powder. The inflammatory reaction is slight; it disappears in a few days. The author concludes (a) that a complete cure may be brought about by this operation in cases in which conditions such as bone disease or polypi are not present to keep up the suppuration; and (b) that it will complete the cure in cases in which carious bone, ossicles or polypi have been removed, and thus often prevent the necessity of recourse to the radical mastoid operation.

A. J. Wright.

PHARYNX.

Gerber, Prof. (Königsberg).—Our Knowledge and Ignorance of Plaut-Vincent Angina. "Zeitschr. f. Laryngol.," Bd. iv, Heft 3.

Ultero-membranous anginas may resemble diphtheritic and syphilitic affections of the fauces and pharynx. With regard to the bacteriology of Plaut-Vincent angina it has been supposed that we have to do with two causal organisms for one disease—(a bacillus and a protozoon, symbiosis or synergism). Others hold that the two are really only different forms or stages of the same organism, but (1) Gerber himself has never seen intermediate forms; (2) the staining reactions of the two are different—the bacilli always being darker than the spirochaetes; (3) dark field preparations show more spirochaetes, while stained films show more bacilli. Another important question is, Do both cause the disease or is one alone guilty? Experiments on animals seem to show that the spirochaetes are the more active agents, but that the most severe changes are produced when both are present. Salvarsan is an active remedy not only against the *Spirochaeta pallida*, but against all spirochaetes; it therefore acts in Plaut-Vincent angina. From an experience of three cases Gerber concludes that, when an ultero-membranous angina reacts to a specific remedy for spirochaetes such as salvarsan, the angina must be a "spirochaete disease." The fusiform bacilli, however, also disappeared after "606," and Gerber says that this may have been due to the salvarsan or to the fact that the bacilli had lost their colleagues. Spirochaetes and fusiform bacilli exist in the normal mouth, especially beneath the gums, in the tonsillar crypts and between the lingual papillae; they are, however, scanty as compared with the numbers present in Plaut-Vincent angina. Further, the microscopical appearances in scorbutic ulceration are exactly the same as those in Plaut-Vincent angina. Gerber concludes that a

whole series of ulcero-membranous diseases of the osopharynx are due to spirochaetes and fusiform bacilli, and that Plaut-Vincent angina is only a special clinical variety: in some cases the spirochaetes and fusiform bacilli are only accessory (certain forms of diphtheria), while in others they are the causal organisms. Gerber holds that the necks of the teeth are the usual nidus, and states that the organisms do not occur in infants before the first dentition.

J. S. Fraser.

Kelsey, A. L.—Osteo-fibroma occupying the Tonsillar Fossa (probably of Styloid Process). "Annals of Otol., Rhinol., and Laryngol.," vol. xx, p. 463.

Patient, a woman, aged forty-nine. Ulcerated right tonsil six years before; second attack of pain eight months ago. Palate bulged on right side by mass size of a walnut. A tentative diagnosis of sarcoma made. Operation by enucleation was attempted and the tumour was finally removed. It measured 4 cm. in all diameters save the antero-posterior, which was 3 cm., and proved to be an osteo-fibroma. Death resulted on the thirteenth day from fulminating pneumonia.

Macleod Yearsley.

REVIEWS.

The Medical Annual, 1912. Bristol: John Wright & Sons. London: Simpkin, Marshall, Hamilton, Kent & Co.

The rapidity with which the *Medical Annual* has again made its appearance reminds us of the shortness of life, but the richness, freshness and abundance of the material contained in it impress upon us at the same time the length of art. Its general index contains many new headings, and its list of authors is characterised by the absence of some of the former well-known names and the addition of some new ones, but all of them standing unquestionably in the first rank of their departments. Amongst those of home growth we find such names as Thomson Walker, Tubby, Still, Purves Stewart, J. J. Perkins, C. F. Marshall, Graham Little, Leedham-Green, Priestley Leech, Robert Jones, Robert Hutchison, Sampson Handley, Goodall, Victor Bonney, Charles Bent Ball, all of whom are identified with the subjects allotted to them. Among foreign names we notice particularly the honoured one of Dr. Stephane Leduc, of Nantes, who contributes an article on "Ionic Medication," but who is well known to us as the inventor of Leduc's tube for the inhalation of powders into the larynx.

In our own special department we find that the report on the diseases of the ear, nose and throat has been confided to Dr. George L. Richards, of Fall River, Mass., whose name is well and honourably known to us, and to Percy Friedenberg, of New York, with whom we are not as yet quite so familiar. We have been hitherto thoroughly satisfied with the work afforded us in these pages, and on the whole the present ones do not suffer materially by comparison, but it will be admitted by all readers that it is an interesting and pleasant variety to study the methods adopted by the new contributors, more especially as the work is so eminently satisfactory. The references to American and foreign authors are, perhaps, somewhat more numerous than in former years, but the British authors

and British publications have received ample notice, the JOURNAL OF LARYNGOLOGY, RHINOLOGY AND OTOTOLOGY providing a considerable number of the articles which are abstracted or referred to.

Attention is drawn to the so-called conservative radical mastoid operation, but in regard to its history it would have been more correct to have given the credit of priority to Jansen of Berlin. When the statement is made (p. 245) that Stacke favours this operation, a most erroneous impression is conveyed if it means that he favours the operation as practised by its most ardent exponents here. In the discussion on his paper in the German Otological Society (*Verhandlungen*, 1911, p. 361) his words are as follows: "Ich habe gesagt, dass ich nur die Fälle mit abgeschlossener Paukenhöhle für die Operation reserviert wissen will. Ich operiere niemals so, wenn Perforationen da sind, niemals, wenn die Paukenhöhle nicht abgeschlossen ist." ("I have said that I only regard as suitable for this operation cases in which the tympanic cavity is shut off. I never operate in this manner when perforations are present, nor when the tympanic cavity is not shut off.") It will be seen that Stacke confines this operation to those cases in which the discharge comes from the attic and antral aditus, the main cavity of the tympanum being shut off from these by adhesions. It is to be hoped that his paper, with the discussion following it, may be presented to our readers with the fulness it deserves. Professor Preysing, in the same discussion (p. 360), explains the divergence of opinion with regard to the operation by the view—"Dass die Herren, welche die schönen Erfolge bei konservativen Radicaloperationen haben, Fälle operieren die wir überhaupt noch nicht operieren." ("That those who obtain fine results by means of conservative radical operations, operate upon cases upon which, as a rule, we would not yet operate.") This remark was received by the Society with the warmest approval. In the *Medical Annual* before us a note is made by Dr. G. L. Richards to the effect that "many cases similar in character to those reported should be curable by still more conservative methods, namely, careful local treatment through the canal without any mastoid operation" (p. 245).

Valuable abstracts are given of papers on aural tuberculosis, infective labyrinthitis, and numerous other burning questions.

Our readers will thank us for recommending this year's issue for their study.
Dundas Grant.

Die neue Wiener Klinik für Kehlkopf und Nasenkrankheiten. Von Prof. Dr. OTTOKAR CHIARI and Prof. Dr. OTTO KAHLER. Berlin and Vienna: Urban und Schwarzenberg, 1912.

This is an illustrated description of the imposing new buildings which have been erected in Vienna to house the University Clinic for Diseases of the Throat and Nose, and it is a description which will arouse not a little envy in the mind of many a British reader. Palatial in its proportions, the institution represents the last word in scientific architecture and arrangement both in regard to the treatment of disease and to the teaching of students. Those who may be, at the moment, unable to make a pilgrimage of inspection to Vienna should obtain this little brochure, more especially since the excellence of the reproduced photographs renders a knowledge of German unnecessary to the understanding of the message the book conveys.
Dan McKenzie.

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**THE FAVOURABLE INFLUENCE OF RHINOLOGICAL OR
PHARYNGO-RHINOLOGICAL OPERATIONS ON EXOPHTHALMOS
AND HYPERTROPHY OF THE THYROID
GLAND. A CONTRIBUTION TO THE TREATMENT OF
GRAVES' DISEASE.**

BY DR. JOHN SENDZIAK.
Warsaw (Poland).

It is long since attention was first drawn to the fact that exophthalmos and hypertrophy of the thyroid gland, simple as well as that accompanying Graves' disease, diminish of themselves, or even completely disappear after certain operations (galvano-cautery, incisions) in the nose, naso-pharynx and pharynx. Flack, of Freiburg, was the first¹ who drew attention to this fact—the same Flack whose theory of the reflex neuroses of nasal origin produced some stir about thirty years ago.

This author observed and published in 1886 (1) a case of a patient, aged seventeen, with exophthalmos, goitre, and other symptoms of Graves' disease, such as tachycardia, accelerated pulse (100), etc. All these symptoms, especially the exophthalmos, had disappeared after the galvano-caustic cauterisation of the hypertrophied turbinated bodies. It was striking that the ocular symptoms as early as the second day showed an enormous

¹ According to B. Fraenkel and Hoffmann, Hopmann was the first.

difference, the exophthalmos becoming less each time the turbinated body on the corresponding side was cauterised.

In the second case, reported in 1887 by Bobone (2), distinct improvement of the symptoms of Graves' disease followed cauterisation of the hypertrophied turbinated bodies.

The third case was published in 1888 by Hopmann, of Cologne (3): A woman, aged forty, showed exophthalmos, especially on the right side, with tachycardia; pulse 136; rhino-pharyngitis sicca and polypi of the nose, after the removal of which the exophthalmos disappeared, and the pulse fell to 92. Eighteen months later a slight relapse of the ocular symptoms ensued. In this case there was a striking diminution of the exophthalmos on both sides after the unilateral nasal operation.

The fourth case was observed by B. Fraenkel, of Berlin, in the same year (1888) (4). In this case also, as in Hopmann's, the Graves's disease was not typical, exophthalmos being absent (the so-called *forme fruste*); goitre, however, and tachycardia, pulse 120, were present. After cauterisation of the turbinated bodies the cardiac symptoms disappeared, and the hypertrophy of the thyroid gland diminished to a fifth of its former volume.

It was striking in this case that diminution of the goitre followed each time on the side corresponding to the side of the nose operated on. In this case the application of the constant current to the hypertrophied thyroid gland had no success.

In the same year (1888), George Stoker, of London, observed and described (5) two cases of simple goitre which after the cauterisation of the turbinated bodies diminished of itself, and disappeared entirely. The interest felt at this time in the question of the favourable influence of the nasal operations upon the symptoms of Graves' disease is shown by the fact that Professor Cozzolino, of Naples, chose this subject for a clinical conference (6).

Simultaneously, Jonas, in a special monograph devoted to the reflex neuroses of nasal origin, minutely reviewed the question (7); he, like Flack, looked upon Basedow's disease as a nasal reflex neurosis from the sympathetic nerves of the nose ("*nasogene Reflexneurose des Sympaticus*"). In 1891, Muschold, of Berlin, demonstrated in the Berlin Laryngological Society, and afterwards published (8), the following case: A female, aged forty-five, had suffered for a long time from Graves' disease with swelling of the thyroid gland and exophthalmos, especially on the right side. After the removal by means of the galvano-caustic snare of hypertrophy of the posterior end of the right turbinated body all

the symptoms diminished or completely disappeared. The goitre became much smaller, the circumference of the neck falling from 40 cm. to 36.5 cm. In this case the changes in the nose existed on the side corresponding to the ocular and glandular disturbances.

In the discussion upon this paper, Heymann, of Berlin, reported a case of Graves' disease with the characteristic "triad," *i. e.* exophthalmos, goitre, and tachycardia in a little girl, whose symptoms diminished after an operation for adenoids.

Flatau, on the contrary, had not observed any effect after the nasal operations upon the course of this disorder. Landgraf, of Berlin, also looked sceptically at this question. Winckler, of Bremen (9), was of opinion that in exophthalmic goitre we cannot expect any improvement save after removal of gross changes obstructing the nose. M. Schmidt, in 1894 (10), reported two cases of Graves' disease with the characteristic "triad," in both of which after removal of the nasal changes by cauterisation of the turbinated bodies, sawing the nasal crests, all the symptoms disappeared. In but a few days a striking difference was observed, especially as regards the exophthalmos. The improvement continued—for instance, in the first case at the end of ten years the patient did not present any pathological changes. It is striking that in the second case, that of a physician, the patient himself observed every time before he became worse that he suffered from increased nasal disturbance, and after local treatment of the nose a striking improvement in the state of his health always took place.

In the same year (1894), Scanes Spicer, of London, published (11) a case of a nervous young woman with hypertrophy of the thyroid gland, pulse 140, tremor of the hands—that is, with all the symptoms of Graves' disease save exophthalmos (*forme fruste*), in whom, after an operation for nasal polypi, a considerable improvement took place. This author mentioned also three other cases of simple hypertrophy of the thyroid gland, which were cured after extraction of nasal polypi.

Spencer Watson (12) also observed an analogous case in a patient, aged thirty-five years.

Last year (1910) Rudolf Hoffmann, assistant to Professor Neumayer, of Monaco, after about seventeen years of silence, again returned to this question. He published (13) five cases of Graves' disease, in which the favourable influence of nasal operations upon the symptoms, especially exophthalmos, was observed. In the *first case*, that of a female, aged twenty-one,

with the typical symptoms of exophthalmic goitre, after cauterisation of the right turbinated body the exophthalmos diminished, the circumference of the neck became less, and pulse fell from 120 to 90. After cauterisation of the left inferior turbinal the same effect was observed on the left side. It is characteristic that in this case nasal symptoms were wanting. The author had performed the operation (cauterisation of the turbinated bodies) only in order to produce the effect on the nervous sensory ends in the mucous membrane of the nose, and therefore on the vaso-motor centres. In the *second case*, also a female with Graves' disease (accelerated pulse, goitre, and exophthalmos intermittens), the author also cauterised the left turbinated body, after which the pulse fell from 105 to 98 and the circumference of the neck diminished.

Case 3: A male, aged twenty-two; exophthalmos followed lifting something heavy; goitre for several years; pulse 140. Slight hypertrophy of the turbinated bodies as well as tuberculum septi. Cauterisation of turbinal and septum on the right side with considerable effect (exophthalmos on right side smaller, the circumference of the neck less; pulse 120). After the same operation on the left side the same effect followed as regards the exophthalmos, the circumference of the neck became less and the pulse fell to 105.

Case 4: Young female who from childhood had suffered from difficult respiration and exophthalmos, which disappeared on reaching puberty but returned again after parturition. After cauterisation of the turbinated bodies, as well as crista septi, first on the right side, then on the left, the right and afterwards left eye became less convex by 3 mm. In this case there was no hypertrophy of the thyroid gland.

Case 5: A young female, aged twenty-one, with exophthalmos of a high degree on the right side; after two canterisations of the right turbinated body a considerable retraction (4 mm.) of the bulbus ensued. This author, besides, mentions that in more than twelve cases of simple goitre (hypertrophies of the thyroid gland) he has obtained a considerable diminution (1-2½ cm.) in its volume after nasal operations.

Finally, this year (1911) Stasinski, of Posen, reports (14) a case of a female with unilateral protrusion of the bulbus with slight exophthalmos, slight tachycardia, and disagreeable sensation in the thyroid region. There was frequent inflammation of the palatine tonsils, and they were excised, after which all symptoms disappeared, the eyes, formerly in the form of protrusion,

sinking so as to give the picture of paralysis of the sympathetic nerve.

The author not long ago had occasion in two cases of Graves' disease to confirm the observation that ocular protrusion increases after catching cold, *i. e.* acute catarrh of the nose. Till now all were cases of the favourable influence of nasal operations on the symptoms of Graves' disease. Quite the contrary was reported by Semon (15). After removal of nasal polypi, asthma disappeared, but the exophthalmos ensued on the right side.

Charsley (16) reports a similar case of exophthalmos after canterisation of the turbinated bodies of the nose.

I have personally observed six cases of undoubtedly favourable influence of the nasal or naso-pharyngeal operations on the symptoms of Graves' disease. They are as follows:

Case 1.—A widow, aged thirty-six. A moderate goitre for fourteen years, with headaches, lachrymation, weakness, sweats, coughs, dyspnoea, tremor of the hands, palpitation, finally exophthalmos of the greater degree, with von Graefe's and Stellwag's symptoms; the general state miserable. A very nervous patient; pulse 120. In the nose there was considerable hypertrophy of the turbinated bodies, especially on the right side, with difficulty of breathing through the nose. Both turbinated bodies were cauterised, first the right and afterwards the left, with immediate improvement of the symptoms, especially as regards the exophthalmos. After some weeks all symptoms of Graves' disease (exophthalmos, goitre, tachycardia, etc.) completely disappeared, the general as well as nervous state got much better, and the pulse fell to 88.

Case 2.—Female, aged twenty-six. The older sister suffered from asthma. The general state bad—sweats, chlorosis; for two years considerable exophthalmos, with von Graefe's and Stellwag's symptoms, especially on the right side. Considerable hypertrophy of the thyroid gland, especially on the right side. Palpitation and troubles in the region of the heart; pulse 120, with great nervousness. In the nose and naso-pharynx there was chronic diffuse catarrh. The right inferior turbinal was hypertrophied. As the patient objected to operation, I applied a systematic treatment with vibratory massage of the mucous membrane of the nose and naso-pharynx. After thirty *séances* considerable improvement could be observed in ocular symptoms (exophthalmos much less) as well as in the glandular symptoms (diminution of the goitre—the circumference of the neck from 40 cm. fell to 38·5), with improved general symptoms (pulse 84).

Case 3.—Female, aged forty-five. Very nervous (hysterical), in the period of climacteric, with typical “triad” of Graves’ disease (exophthalmos, goitre, tachycardia). In the nasal as well as naso-pharyngeal cavities there were symptoms of chronic atrophic catarrh, anosmia and ageusia. Here also, as in Case 2, vibratory massage of the mucous membrane of the nose and naso-pharynx, methodically applied for a month, produced considerable amelioration in all the symptoms; smell and taste returned. In the last three cases we had to do with only one principal symptom, namely, exophthalmos, but it was of the highest degree.

Case 4.—Boy, aged five. Enormous exophthalmos, especially in the right eye, with von Graefe’s symptoms—salivation, snoring during the night, open mouth, idiotic expression, aprosexia nasalis. In the naso-pharynx hypertrophy of Luschka’s tonsil (the so-called adenoid vegetation), as well as hypertrophy of the palatine tonsils, especially on the right side. Tonsillotomy on the right; removal of the adenoid vegetations by means of Gottstein’s knife. Immediately after the operation an enormous difference was observed in the appearance of the right eye (exophthalmos very much diminished). After a year quite healthy; eyes normal, the appearance quite different, the general state excellent. He developed physically and intellectually, the idiotic appearance disappeared; he learned the alphabet easily.

Case 5.—Boy, aged eight. Enormous exophthalmos for three years, which generally increased with every catarrh in the nose. Pavor nocturnus, palpitation, obstruction of the nose, snoring; aprosexia nasalis; he learns with difficulty. In the naso-pharynx there were many adenoid vegetations. After removal with Gottstein’s knife immediate and great improvement, especially as regards the exophthalmos, ensued. Six months later normal appearance: no trace of exophthalmos. He was quite healthy and learned well; had good memory.

Case 6.—Boy, aged thirteen. Exophthalmos with von Graefe’s symptoms—enuresis, palpitation, aprosexia nasalis. Considerable nasal obstruction due to adenoid vegetations. Operation; Excision by means of Gottstein’s knife, also, as in the above two cases, without general narcosis. On the third day after operation enormous difference in the appearance of the eyes, to which the mother herself drew attention. Since the operation also there was neither asthma nor enuresis. Further, the general state, as well as local, became better and better; the eyes normal; asthma and enuresis nocturna completely disappeared. The boy learns much better and is less apathetic.

We see from the above report that there exist in the literature more than twenty cases of simple hypertrophies of the thyroid gland, or exophthalmos, and other symptoms of Graves' disease, to which undoubted security is given by the well-known names of M. Schmidt, B. Fraenkel, Hoffmann, etc. Improvement, and even in many cases complete recovery, followed the performance of different operations in the nose or naso-pharynx.

What are the changes in the upper respiratory tract which are seen in Graves' disease? There were hypertrophic changes in the inferior turbinated bodies (B. Fraenkel, M. Schmidt, and one of my cases), less seldom in middle turbinal (Flack); nasal polypi have also been observed (Hopmann), and finally changes in the nasal septum (tuberculum, [Hoffmann], and crest [M. Schmidt]). In two cases (Hopmann and one of my cases) there existed on the contrary atrophic changes in the mucous membrane of the nose and naso-pharynx. Finally affections of the accessory sinuses of the nose have been noted (Hopmann).

Sometimes also we have to do with simple diffuse chronic catarrh of the mucous membrane of the upper respiratory tract (Hoffmann, one of my cases). Of other changes adenoid vegetations in the naso-pharynx have been recorded (Heymann, three of my cases), as well as hypertrophy of palatine tonsils (Statinski, one of my cases).

What were the methods applied in these cases? In the most cases where there existed hypertrophic changes on the turbinals cauterisation was adopted, superficial in order to avoid secondary cicatrices, which might cause reflex symptoms (Hoffmann); sometimes galvano-caustic snare was tried (in polypoid turbinals [Musehold], or real polypi [Hopmann]). Less frequently cutting operations were used—sawing of the crista septi (M. Schmidt), removal of adenoid vegetations (Heymann—my own three cases), as well as tonsillotomy (Statinski—one of my cases). Finally, in two of my cases, with diffuse chronic simple, as well as atrophic catarrh of the mucous membrane of the nose and naso-pharynx, I applied successfully vibratory massage (Braun) to the mucous membrane (Laker).

The favourable influence of the nasal therapeutic methods and operations in the course of Graves' disease is shown in three principal ways:

(1) The most striking is the influence of these operations on the ocular symptoms, especially on the exophthalmos with von Graefe's and Stellwag's symptoms. In these cases we receive

striking improvement (diminution of the exophthalmos to 4 mm. Hoffmann), or even, as in three of my cases, a complete return to the normal. In Hoffmann's case this amelioration did not appear immediately after the operation, but on the second day. With this, however, my observations do not agree. In my two cases I had occasion to notice an immediate and striking difference in the appearance of the eye after the excision of adenoid vegetations or tonsillotomy (in only one case this difference took place on third day). Naturally in the following days this amelioration became still more evident.

(2) The favourable influence of nasal respiratory nasopharyngeal operations on the hypertrophy of thyroid gland (goitre). Contrasting with the ocular symptom this showed itself much later (after a week, Hoffmann), and generally it was not so striking, at least it was so in my observations, except once. Hoffmann, on the contrary, has observed a considerable difference (diminution in the circumference of the neck fell $2\frac{1}{2}$ cm.). There has also been noted complete recovery from the goitre after nasal operations (M. Schmidt, G. Stoker).

(3) Finally, the favourable effect of these operations on the other symptoms of Graves' disease (tachycardia, tremor, etc.).

Here also relatively quickly amelioration can be remarked—the pulse falls from 140–120 to 88, or even 84 (Hoffmann, as well as my cases). It is also very important to know how constant this favourable effect is. In most cases it is constant, although not always, as for instance in one of Hoffmann's cases, where after a certain time relapse of the symptoms of Graves' disease ensued.

In two cases of M. Schmidt, on the contrary, the recovery was complete and of long duration (in one case there was no relapse after ten years). In most of my cases also the result persisted (half to one year without relapse).

In this manner, from the above cases of trustworthy authors which I have collected from the literature, as well as from my own personal experience, I think I am authorised to maintain that in every case of Graves' disease (with the characteristic "triad" of the symptoms, *i.e.* exophthalmos, goitre, and tachycardia), or in the so-called *forme fruste*, *i.e.* without the ocular symptoms, finally, in simple vascular swellings (hypertrophies) of the thyroid gland (goitre), we must minutely examine the upper respiratory tract, especially the nose and naso-pharynx, and in the event of any pathological changes being discovered, immediately submit them to the local treatment, namely operation.

Hoffmann goes perhaps a little too far when he maintains that even in the absence of any changes in the nose we should simply experimentally perform superficial cauterisation of the turbinals, and he explains the favourable effect of this operation upon the symptoms of Graves' disease by production of shock. I have already mentioned that Winckler is quite of the opposite opinion.

We pass now to the explanation of the effect of nasal or nasopharyngeal therapeutic methods (operation) on the ocular as well as on the glandular and general symptoms of Graves' disease. Flack, from his theory of reflex neuroses of nasal origin, regards his case as a vaso-dilator reflex neurosis, analogous to certain forms of asthma and headache.

Böhme, an adherent of Flack's theory, supposes that hypertrophies of the nasal mucous membrane can induce irritation of the sympathetic nerve, so as to produce goitre and exophthalmos.

George Stoker explained the favourable influence of nasal cauterisations upon simple goitre in his two cases by reflex irritation effected by cauterisation of the vaso-motor apparatus, which causes secondary spasm of the blood-vessels of the thyroid gland and so diminution of its volume.

Jonas, a fanatical adherent of Flack's theory, regards also exophthalmos and Graves' disease as "a nasogenic reflex neurosis of the sympathetic system."

Hoffmann, the author of the best paper on this subject, explains the disappearance of the symptoms of Graves' disease after simple cauterisation of the mucous membrane of the nose, even in the absence of obstructing and irritating factors, by a combination or summation of the irritations acting on a labile vaso-motor centre, which, contracting, acts on the smooth musculature, including the extra-vascular smooth muscles, especially of the corresponding half of the head.

Finally, with us (Poland), Stasinski believes that the pathological predisposition of the sympathetic nerve is the primary cause of Graves' disease, and that inflammation of the tonsils often precedes it. This author draws attention also to the fact that the nasal abnormalities sometimes cause the exophthalmos. Examination during recent years has proved that the superior ophthalmic vein communicates not only with the anterior facial vein, but also with the ethmoidal veins, and therefore with the superior parts of the nasal cavities; further, that the inferior ophthalmic vein joins with the deep nasal veins and the veins of the maxillary sinus.

This author not long ago had occasion to observe in two cases of Graves' disease an increase in the exophthalmos after acute catarrh of the nose.

Other authors (M. Schmidt, B. Fraenkel, etc.) in their cases have stated only the fact of the undoubtedly favourable influence of nasal operations upon the symptoms of Graves' disease, but without entering into an explanation of this fact.

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THE TEACHING OF OTO-RHINO-LARYNGOLOGY IN FRANCE.

BY DR. GEORGES GELLÉ,

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MEDICAL education in France is vested in the Faculties of the seven Universities of Paris, Montpellier, Nancy, Lyons, Bordeaux, Lille (where there is also an extra-mural Faculty), and Toulouse; in four schools with complete curricula (Marseilles, Nantes, Alger and Rennes); and in twelve preparatory schools.

In none of these centres is there a University Chair of oto-rhino-

laryngology, this branch of medicine being less favourably treated than ophthalmology, psychiatry and dermatology, each of which is represented in all the Universities by a titular Professor.

All, or nearly all, existing French specialists owe their education to gratuitous instruction either in private clinics such as those of Lubet-Barbon and Martin, of Luc, Boulay, etc., or in hospital clinics attached to the municipalities, like those of Gougenheim and Lermoyez in Paris, of Garel in Lyons, etc., or in special consultation departments in the clinics of certain professors such as Gellé, sen., who was attached to Charcot's department at the Salpêtrière, and myself in the clinic of the Professor of Ophthalmology, M. de Lapersonne. This teaching is all voluntary and in no sense official, and at the examinations students are examined in laryngology by professors of internal medicine and in otology and rhinology by professors of external pathology.

Nowhere in France is any evidence demanded as to the special attainments of medical practitioners. The specialist is self-created. It must, however, be noted that, since May, 1907, the French Oto-rhino-laryngological Society has stipulated that those who desire to become members must give evidence that they have studied oto-rhino-laryngology for twelve months in one or more special clinics, university or extra-mural (*libres*), either in France or abroad. Further, they must show, at the time of application, that they have been engaged for a year in the exclusive practice of the speciality in one or two fixed residences in France. Two sponsors are required to guarantee, on their own responsibility, the validity of the candidate's declarations relative to the aforesaid conditions of study and practice.

As a result of the pressure of public opinion sensible progress has for some time been manifest, and in a few months perhaps we shall have the first full professor of oto-rhino-laryngology in France. To all appearance it is one of the provincial universities which will be the first to set the good example. Indeed, in Bordeaux since 1904, and in Montpellier and Lyons since 1908, the instruction has been in the hands of a *Professeur Adjoint* (a title corresponding to the German "Professor Extraordinary"). In Nancy since 1901 and in Paris since 1896 it has been given by a Lecturer (*chargé de cours*). Later on we shall examine the arrangements which these two universities have made for teaching our special subjects.

We proceed now to review the teaching of oto-rhino-laryngology in each of our University faculties.

(1) *The Faculty of Medicine of Paris.*—Apparently it was in

1896 when Dr. Castex was first appointed lecturer, on the proposal of Brouardel, the *doyen* at that time. At present he has three assistants. Students desiring to take out the course enrol themselves at the secretariat of the Faculty and pay a fee of fifty francs a month. They cannot enrol for less than a month, and the courses do not qualify for graduation (“*ils [i.e. the students] ne sont pas considérés comme stagiaires*”).

Pupils and patients are admitted to the clinic, where instruction is given (*Ecole pratique*, 10 rue Racine) daily from three to five o'clock by the chef de clinique and his assistants. But the detailed arrangements are as follows: An advanced class is held both in winter and in summer in the Amphithéâtre Cruevillier; on Tuesdays, Thursdays, and Saturdays a gratuitous course lasting three months is given by the professor; in the spring a course at the clinic is held; and lastly, there is a vacation course in September conducted by the assistants.

Unfortunately there are no beds attached to the clinic, and major operations have to be performed at a special *Maison de Santé*, where the necessitous poor are treated free. Since the date of its foundation until December 31st, 1911, 309,199 consultations had been held, 14,281 operations performed, and 2243 pupils had attended the clinic.

So much for the official tuition. In addition there are several other very important centres, namely, that of Lermoyez at the hospital St. Antoine, that of Sebileau at the Lariboisière, and lastly, that of Lombard at the Laënnec. All these clinics possess beds and operating theatres, and the classes organised by the chiefs have a high reputation and are much sought after. These clinics are under the administration of the Municipality of Paris.

It should be noted that for several years past this municipal administration has instituted a competition of oto-rhino-laryngologists by which candidates are chosen to fill the vacancies in the hospitals. There are four of these—Lombard, Bourgeois, Lemaître and Grivot, of whom only the first has a hospital appointment. With regard to Lermoyez, he is physician to the hospital while Sebileau is surgeon to the hospital, but their work is special and equivalent to that of oto-laryngologist to the hospital.

In several of the university clinics—neurology, dermatology, etc.—there is an oto-rhino-laryngologist. This is the post which I occupy at the Hôtel Dieu in the ophthalmological clinic of Professor de Lapersonne. During May and June an advanced course (*cours de perfectionnement*) is held at which I teach rhinology and otology

in relation to orbito-ocular affections. The teaching is followed by practical exercises on the cadaver, the different operations on the sinuses being performed by the pupils. The fee for the course is 100 francs. It is especially arranged for the future French ophthalmologists who intend to settle in the provinces, where ophthalmology and our own speciality must be practised side by side if the practitioner hopes to make a living.

Thus, when we consider that in addition to this teaching there are at the disposal of the student the handsome and well-known private clinics we mentioned at the beginning of this article, it is obvious that a student can continue his special training for as long as he pleases, and it is not surprising to find that foreign students attending the courses are as numerous as ever they were. Official recognition is all that is wanting, and it cannot be much longer delayed.

(2) *The Faculty of Medicine of Nancy*.—Special instruction was initiated in Nancy on November 1, 1897, by Dr. P. Jacques, *Professeur Adjoint*, in a course which is gratuitous. In 1901 it was officially recognised by the inauguration of a lectureship with a modest stipend from the University funds.

This clinic is provided with twenty-seven beds and admits from 3000 to 4000 patients annually. The staff consists of a chief paid by the University, an interne supported by the hospital administration, and two externes. The classes are intended for fourth or fifth year students of medicine and they are obliged to take out a three months' course. Dental students attend the course as part of their training in stomatology. Clinical demonstrations are given on Mondays and Fridays from ten to twelve, and a weekly lecture is delivered on Wednesdays. The class is free to students. With the help of one of his assistants Jacques conducts special practical classes for the residents in the hospital, and these are also free. For the more advanced courses, two in number, for doctors and post-graduate students a fee is charged.

(3) *The Faculty of Medicine of Lille*.—In Lille there is no recognised course of teaching, but a free class for fourth-year students is carried on by Prof. Gaudier during the winter session. It consists of an out-patient department which is an adjunct to the surgical clinic of Prof. Gaudier. Minor operations are performed in the out-patient room and major operations in the hospital. I understand that Prof. Gaudier is the first who has asked candidates in the clinical examinations to examine patients suffering from simple special diseases. His class, though not compulsory, is well attended.

In the Catholic Faculty of Medicine at Lille there has been an oto-rhino-laryngological out-patient department since 1887, under the care of Dr. Lavrand. An interne is attached to the clinic, but it has no free beds. Classes remain optional, and there is no regular advanced course.

(4) *The Faculty of Medicine of Toulouse*.—There is no recognised course of teaching in Toulouse. Dr. Escat's post is like that formerly held by my father at the Salpêtrière, namely, an official out-patient department in another clinic—in this case that of dermato-syphilology. This is a "provisional" arrangement which has now been in existence for eighteen years. Since 1894 Escat has every year conducted a gratuitous course of instruction, a course which is recognised by the Council of the University. The state of matters in Toulouse is lamentable, and it is astonishing that in France conditions like these should have lasted for such a length of time.

(5) *The Faculty of Medicine of Bordeaux*.—The teaching of oto-rhino-laryngology in Bordeaux is carried on as follows: First of all there is an official (State) instruction consisting of out-patient consultations held in premises belonging to the University. In addition, a grant of sixteen beds has been made to the department by the hospital administration of Bordeaux.

The clinic is under the control of Prof. Moure, supported by an assistant paid by the State, and assisted by an interne and externes and medical students. These last are students who, in their fourth year, are distributed among the various special clinics (ophthalmology, dermatology, urology, oto-rhinology).

Moure, if my memory is correct, began in 1880 with a free instruction, which was the first special clinic in the provinces. But it is only since 1890 that he has been officially recognised, at first as Lecturer (*chargé de cours*), and then, since 1904, as *Professeur Adjoint*.

(6) *The Faculty of Medicine of Montpellier*.—In 1907, Mouret, then supernumerary professor of anatomy, was given a clinical course in oto-rhino-laryngology with an out-patient department at the general hospital. Next, he was given some beds to be shared with urology. In 1908 he was appointed *Professeur Adjoint*, and since then further advances fall to be recorded in the shape of twenty-two beds. But the instrumental material is still scanty, and there is neither a *chef de clinique* nor an interne—only a couple of externes. The course qualifies for graduation, and at the end of each term the professor grants a certificate testifying

that the pupil has diligently followed the course. Refusal of the certificate is equivalent to the absence of a class certificate of attendance.

(7) *The Faculty of Medicine of Lyons.*—In Lyons there was no recognised teaching prior to 1898. Garel and Lannois each carried on gratuitous out-patient clinics and conducted free courses of instruction. In 1898 Lannois became lecturer, and then in 1908 *Professeur Adjoint*. A portion of Lannois' clinic having been ceded by the Lyons hospital administration in order to establish a university clinic, it now comprises a large hall for consultations, a lecture room, an operating theatre and eighteen beds. There is an assistant of the clinic—paid by the university—and an interne and an externe dependent upon the hospitals.

The courses of instruction, which are free, are open to third and fourth years' students and to pupils of the School of Military Medicine.

In addition to this fine clinic there are also in Lyons an out-patient clinic under Dr. Collet and another under Dr. Garel, but neither of these is officially recognised.

Thus it is seen that the development, after some years of restraint, is at last taking shape, so that at the present day in some of the universities—Bordeaux, Lyons, Nancy—well-established and well-equipped clinics and courses of instruction have been installed, all that is absent being the university title of Professor.

This further advance is opposed, here and there, by certain personal influences, and everywhere by financial considerations. For the French Republic, which lavishes money without stint on elementary education—with, often, but a mediocre result—behaves towards higher education in the most miserly fashion.

(D. M., *Trans.*)

SOCIETIES' PROCEEDINGS.

ROYAL SOCIETY OF MEDICINE.—OTOLOGICAL SECTION.

May 17, 1912.MR. HUGH E. JONES, *Vice-President, in the Chair.**Abridged Report.***Wax-plate Model of a Portion of the Labyrinth and the Inner Tympanic Wall in a Case of Post-suppurative Otitis Media.—**

FIG. 1.—From outer aspect. 1, stapes; 2, facial nerve; 3, fossula rotunda and region of membrana secundaria, occluded by fibrous adhesions; 4, external semicircular canal (outer crus).

Sydney Scott, M.S.—The patient was a man, aged sixty-eight, who died of malignant disease of the pancreas. For many years before death he had been "stone deaf" to "loud shouting into the ear."

The exhibitor received the temporal bone in formalin, and found the tympanic membrane, malleus and incus had disappeared, and that the tympanum, attic, aditus and antrum were occupied by a small cholesteatomatous mass. There was no sign of granulation or pus.

The histological sections showed that the stapes and facial nerve were embedded in a mass of sub-cholesteatomatous fibrous tissue. The walls

of the facial canal had been eroded and destroyed, exposing the nerve to pressure and displacement downwards, where it came into contact with the stapes. Both labyrinth windows were occluded. The stapes was perfect in all respects in every section. The cartilage cells in the base of the stapes and margins of the fenestra ovalis were unchanged, and the annular ligament was not thickened or displaced by bone. The vestibular nerve-endings were normal.

Decalcification was carried out by the method previously described by the author. The sections, embedded in paraffin, were cut with a flat-cutting Cambridge rocking microtome. All sections were mounted serially, and



FIG. 2.—From upper aspect. 1, facial nerve; 2, stapes; 3, vestibule; 4, membrana secundaria and commencement of basal coil of cochlea; 5, jugular vault.

one in every eight was drawn by Edinger's projection apparatus, magnified twenty-five diameters, on to wax plates (2 mm. thick). (Born's method.)

The Semicircular Canals and the Sense of Position or Orientation.—**Dan McKenzie, M.D.**—This was a paper dealing with the question of the influence of vestibular impressions upon the sense of direction or position. The speaker first of all discussed the sense of orientation in the lower animals, particularly in birds and with special reference to its sensory bases. In his opinion migration in birds and homing in pigeons were effected under the general guidance of the vestibular sense aided as to detail by the visual sense. In regard to orientation in man and its possible dependence upon the vestibular sense he referred to James's statements as to the difficulty deaf-mutes experience when swimming under water. He advised that these experiments should be repeated under the modern vestibular tests.

The speaker gave the result of a number of experiments he had made in the human subject. The experiments consisted in the subject being blindfolded and made to turn and advance in a certain direction. The people tested consisted of (1) normal individuals, (2) patients with "impaired" vestibular reactions on both sides, (3) patients with absence of vestibular reactions on both sides. The results were reported in detail, and they went to support the idea that orientation in man is to some extent dependent upon the vestibular sense. Errors in orientation were most noticed in patients with an "impaired" vestibular system, and least noticed in normal persons and in patients with destruction of the vestibular organ. The reason for the good results in the last class was due probably to the fact that the nervous system can accustom itself to the absence of vestibular stimuli. The complete abeyance of vestibular stimuli in moments of bodily stillness and in the absence of visual stimuli is responsible for the uncomfortable sensations of void space, or loss of the sense of position, sometimes experienced by patients with defective or destroyed vestibular organs.

Professor PRITCHARD said it was now thirty-five years since he was first interested in this subject by a practical experience. Four pedestrians, of whom he was one, lost their way in a mountain cloud. Three of them were brothers. A compass was used to get the direction, and it proved to be the opposite to what each thought it to be. They fixed their direction and walked on, and then fixed it again. All the three brothers worked round to the right, and the fourth worked to the left; and that was done over and over again. The experiment was an advantage in that it was light, and yet sight played no part. He felt certain it was vestibular, and it showed that all persons were not equally balanced in the matter of orientation; there was a tendency to go either to one side or the other. It explained the fact that a man when lost in the bush usually went round in a circle. He was much interested in Dr. McKenzie's contribution, and if what he said was correct, the birds alluded to were much better off than human beings in their sense of position.

Mr. MACLEOD YEARSLEY alluded to a paper recently read before the Neurological Section by Dr. Golla, who had been doing a series of experiments on space-perception in man. The author and he did some experiments upon congenitally deaf children, and upon some totally deaf children, who owed their deafness to congenital syphilis. Their conclusions were somewhat indefinite, because the results of the experiments were not very definite. But in some ways the results were rather surprising, because some of the children, who could not be made giddy on a turn-table, although spun round for a quarter of an hour, were able to walk blindfold straight across the hall, a distance of about thirty yards. With regard to orientation in lower animals, he did not see any reference in Dr. McKenzie's paper to the work of Dr. Forel, who some years ago published a number of experiments of his own on the homing instincts of birds, bees and ants. He had shown that the homing instincts of bees are probably due to the sense of sight, and in ants to their antennary sense. Forel maintained that pigeons orientated themselves by the sense of sight, and said that the terrestrial creatures like ourselves had no conception of the enormous field of vision which birds must have. Dr. McKenzie did not seem to believe much in the theory of visual guidance, and he did not know whether he had reflected upon the tremendous field of vision possessed by a bird flying thousands of feet above the surface of the earth.

Dr. H. J. DAVIS said he was much interested in the passages in the

paper dealing with orientation in fish. It seemed to be that the lower down in the animal scale one went the better was the orientation. The salmon was low in the scale, but as was pointed out, it would return for spawning purposes to the place where it was hatched. Salmon not only found again the estuary of the main river wherein they were born, but they would re-traverse the same river and the same tributary of that river to get there; and they were said never to go beyond the spawning bed on which they were hatched. It was said that they judged largely by the temperature of the water, but as that was not uniform at the same time of the year he did not agree with that. He did not see how the accuracy of the return of the fish could have anything to do with the semicircular canals; the fish must have some instinct which humans have not.

Mr. WAGGETT said he would like to know what the authorities had to say with reference to the sense of the north, which was very definite in some, but was not common to all. He had himself an innate knowledge of the north perfectly well defined, except when he was out of health. He assumed that pigeons possessed that sense more keenly than human beings.

Dr. DUNDAS GRANT, in the cases where deviation had taken place, asked whether he meant one vestibule was impaired, or both. Most of the people who were tested deviated to the left, and that he (the speaker) considered a physiological condition. There were some people who could sleep east and west, but who felt they could not sleep north and south. Birds might have the same sensitiveness to the earth's magnetism. With regard to whether animals possessed senses which we did not, or whether certain senses in them were more highly developed, it seemed to have been made out by the discussion that homing birds had an enormously wider range of vision than man. No doubt the vestibular sense helped in so far as it indicated changes of movement or position on the part of the individual—his orientation—but its share in the choice of direction in migration could only be a small one.

The CHAIRMAN (Mr. HUGH E. JONES) asked whether Dr. McKenzie considered, as the result of his experiments, that the complete ablation of the semi-circular canals brought one back nearly to the original state—*i. e.* whether he had made a marked distinction between impairment and ablation. Must one consider that ablation was not a serious injury? He took it that in cases of impairment confused stimuli were sent up to the centre for orientation, whereas when the canals were completely absent there were no stimuli at all, and the judgment was not interfered with. Could members console themselves when they had ablated a labyrinth that they had not deprived the patient of an essential organ?

Dr. MCKENZIE, in reply, said most of the points which had been raised would be found to have been answered in the paper. He did not agree with Cyon that the whole of our idea of space-perception was dependent on the canals; he believed sight had much to do with it. Mr. Yearsley's experience with children with vertigo was borne out by his own experiments, and that answered the Chairman's question about ablation. He believed that ablation removed abnormal stimuli, and orientation by vision and also by the muscular sense became extraordinarily perfected. In that way the person was able to dispense with the labyrinth. The sense of the position of "the north" was another way of expressing the sense of orientation, and it no doubt depended largely on the points he had touched on in the paper. When he referred to "ablation" of the labyrinth or "impairment" of it, he meant both labyrinths.

The Voice-raising Test with Bárány's Noise Machine.—**J. Dundas Grant, M.D.**—Dr. Grant showed a patient with complete bilateral deafness on whom he demonstrated the effect of Bárány's noise machine. In normal hearing the application of the machine to either ear during the process of reading aloud resulted in a great increase of loudness of the voice during such application, the reader being quite unaware of any change of effort. On the other hand, the application of the machine to the deaf patient produced no alteration in loudness during reading. It was an admirable means of testing for malingering, as it would be practically impossible to simulate the effect. In a case of unilateral deafness the voice-raising was distinctly greater when the noise machine was applied to the good ear than when applied to the deaf one, in the latter case it being almost *nil*.

Mr. WESTMACOTT asked whether the instrument was effective in pure hysterical deafness.

Dr. GRANT replied that he had no data with regard to hysterical deafness.

Notes on a Case of Deafness caused by Excessive Tea-drinking.—**Alexander Sharp, F.R.C.S.**—Female, aged forty, complained of increasing deafness for eighteen months. On examination: Difficulty in locating sound; no tinnitus; watch and whispered voice heard about six inches from both ears; nose and throat healthy; tympanic membranes normal. Tuning-fork tests typical of nerve-deafness. Family history negative; no syphilis. She takes strong tea as often as eight or ten times a day. Tea drinking stopped, and in four weeks hearing improved to 18 in. for watch and whispered voice. Improvement continued until hearing was nearly normal. In spite of warning patient again took to tea-drinking and deafness resulted. On again giving up the habit normal hearing returned.

Mr. MACLEOD YEARSLEY regarded the case as interesting and had come across nothing similar in otological literature. An interesting point in this connection was that a large amount of tea was drunk by people in Australia, by some at almost every meal in the day, yet one never heard of tea-deafness in that country. He asked whether there was any particular poison in the tea which would act on the internal ear. Also he would like to know what the tuning-fork tests were; they were said to have been typical of nerve-deafness. Was there any loss for high tones? It looked as if there was toxæmic deafness which got well.

A Case of Raynaud's Disease with Vascular Disturbances in the Labyrinth.—**H. J. Davis, M.B.**—The patient is a married woman, aged fifty-one; she has been attending the electrical department under Dr. McDougal for several months with well-marked, though not advanced, Raynaud's disease. Both hands are affected. Her condition has much improved with treatment. During the last three months the left ear has become affected, and the auricle presents some of the usual signs characteristic of the disease; but what troubles the patient most is a violent tinnitus with giddiness coming on "with a sensation of burning heat in the ear." This tinnitus ceases suddenly, as a rule when in bed, and "the inside of the ear then becomes so intensely cold that she feels as though there was a piece of ice inside the ear." This sensation slowly passes off. "The hearing is not affected except when the noises come on." The tinnitus is evidently due to disturbances in the labyrinthine circulation. The patient, a very nervous woman, has been much improved by a mixture of hydrobromic acid and nux vomica, to which 10 gr. of calcium lactate have

been added for each dose; this she has taken for a month. No electrical aural treatment has been applied.

Dr. DAVIS, in reply to questions, said the tinnitus was not of the pulsating character, and the fields of vision had not been tested. She was very difficult to interrogate because she became so very nervous and giddy.

Dr. GRANT pointed out that where the tinnitus was pulsating it could often be stopped by digital comparison of the carotid arteries and the vertebral arteries at the back of the neck. He showed the method of compressing the vertebral arteries.

The CHAIRMAN (Mr. HUGH E. JONES) did not think the deafness passing away when she lay down accorded with hyperæmia of the labyrinth.

PROCEEDINGS OF THE ROYAL SOCIETY OF MEDICINE—LARYNGOLOGICAL SECTION.

March 29, 1912.

Dr. STCLAIR THOMSON, *President of the Section, in the Chair.*

Abridged Report.

Demonstration of Osteoplastic Radical Frontal Sinus Operation on the Dead Body.—P. Watson-Williams, M.D.—(1) First, skin incision from the outer orbital angle along the upper margin of the eyebrow and curving downwards till it reaches a point at the side of the nose corresponding with the most receding portion of the fronto-nasal junction, and thence the incision is carried transversely across the middle line. The skin and soft tissues above the incision are raised, leaving the periosteum intact.

(2) The periosteum is divided by a transverse curved line corresponding to the upper portion of the frontal eminence, and above this line the periosteum is raised, the frontal sinus exposed by chisel or trephine, and the whole of the anterior wall is removed above the curved line, which corresponds to the upper margin of Killian's bracelet. The sinus is denuded of mucous membrane, and the fronto-nasal duct is enlarged by a narrow chisel, so that a large smooth-walled fronto-nasal opening is formed.

(3) Second skin incision from a point about $\frac{1}{2}$ in. below the inner canthus and extending for $\frac{1}{2}$ in. or more outwards and slightly downwards, corresponding with the lower margin of the lachrymal groove. A chisel or periosteal elevator is made to enter the lachrymal groove below and to the inner side of the duct, which is thereby turned safely out of the groove. Then a narrow chisel or cutting forceps is driven right into the nasal passage through the thin bone at the bottom of the lachrymal groove. This bone opening into the nasal passage is enlarged downwards and inwards so as to partially divide the nasal process of the superior maxillary bone.

(4) A curved saw is passed up through the naris till its tip projects out of the enlarged lachrymal groove opening, and the nasal process of the superior maxillary bone is then divided from within outwards, the superficial soft tissues being left intact. Then the bone above the lachrymal groove is divided from within outwards by means of a Gigli saw passed down through the enlarged fronto-nasal passage so as to emerge at the large opening in the bottom of the lachrymal groove.



FIG. 1.—Diagram to show the skin incisions for the operation on both sides. First incision from 2 to A, A to B, B to 2. Second incision to expose lachrymal groove, 3. Third incision from 1 to 4. When the osteoplastic flap is made on one side only, the first incision need only extend from 1 to 2 on that side, and only one lachrymal groove is exposed. Very rarely is it necessary to make two osteoplastic flaps even in double frontal sinus operations (see text), although the first incision must, of course, extend across both sides.

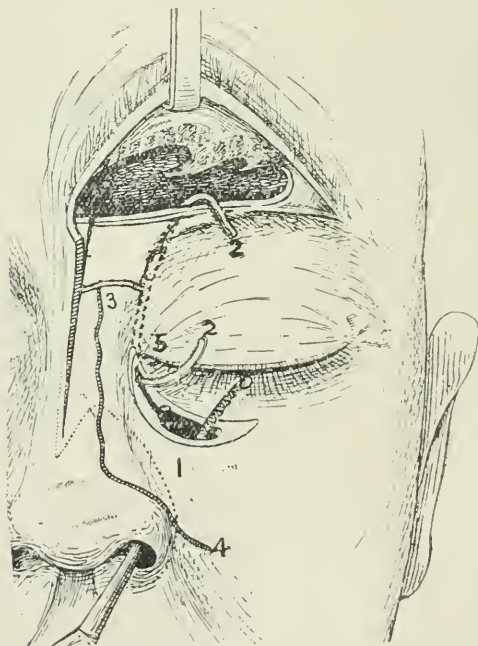


FIG. 2.—Diagram of the osteoplastic frontal sinus operation, illustrating the method of forming the osteoplastic flap after the frontal sinus has been opened. 1. The nasal process of superior maxillary bone being divided subcutaneously by the saw passed in through the nose so as to emerge at the opening in the lachrymal groove. 2, 2. A Gigli saw, passed from above down the enlarged fronto-nasal duct so as to emerge at the lachrymal groove opening to divide the bone subcutaneously. 3. The osteoplastic flap which then results on the vertical division, by knife and saw, of the skin and bone near the mid-line, and which is then turned outwards like a doorway on a hinge. 4. The facial artery running up to 3, where it becomes the angular artery. As it courses inwards below the bony margin where the saw divides the nasal process, the artery is not injured, and the preserved vascular supply of the osteoplastic flap ensures its vitality and the rapid reunion of its cut edges.

(The passing of the Gigli saw is a simple procedure if the author's flexible copper frontal sinus probe with a hooked end is passed down the fronto-nasal duct, so that the hooked end projects at the lachrymal groove, when the Gigli is hooked on and drawn up as the probe is withdrawn.) The bone is divided from within outwards, leaving the superficial soft tissues intact. In this way the hinge of the osteoplastic "door" is made.

(5) Final incision. A longitudinal mesial incision extends from the centre of the transverse incision which crosses the root of the nose down to as far as the lower free margin of the nasal bone, the periosteum not

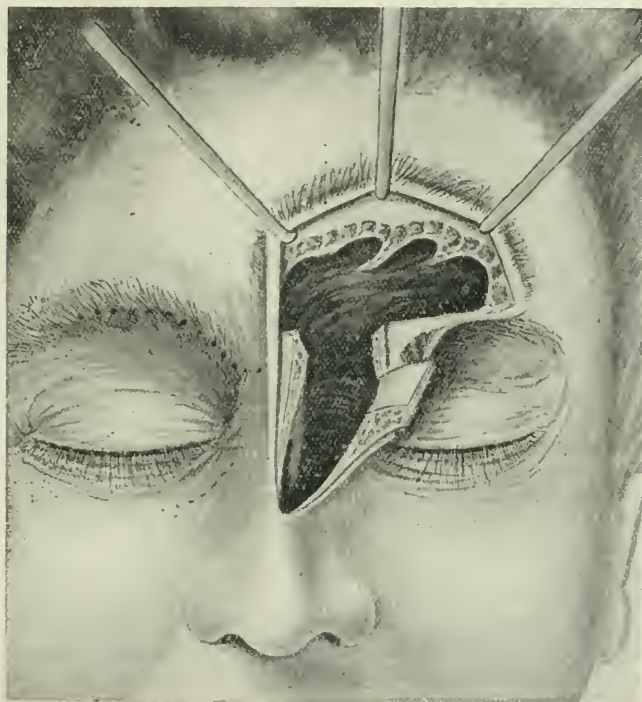


FIG. 3.—The left frontal sinus has been freely opened by removing the anterior sinus wall down to the line of the supra-orbital portion, which is saved (roughly corresponding to Killian's bridge). The osteoplastic flap has been cut and turned outwards, the whole of the ethmoid labyrinth cleared away back to the sphenoidal sinus, and the roof and inner wall of the orbit removed also. Note the upper part of the vertical plate of the middle turbinal has been saved. It is seen lying close to the septum, and marks off the roof of the olfactory fissure, *i. e.* the cribriform plate, from the field of operation. The dotted lines on the patient's right side show the lines of incision that were made on the operated side.

being divided. The soft tissues are raised for about a quarter of an inch from the mesial line. Finally, the Gigli saw is again passed through the fronto-nasal duct down the nasal passage till it emerges below the nasal bone, just outside the margin of the septum nasi, and the bone is divided. The osteoplastic flap thus formed is carefully opened outwards like a doorway, the soft tissues left undivided by the former saw-cuts acting as a hinge. The nasal passage and the whole length of the

fronto-nasal duct are in this way laid freely open to view. The anterior end of the middle turbinal and all the diseased ethmoidal cells are cleared away, if desirable, right back to the sphenoidal sinus, which may also be freely opened. When the frontal sinus floor and ethmoidal cells have been removed and the whole of the diseased area removed, the osteoplastic flap is carefully replaced and the skin incisions sutured.

If both frontal sinuses have to be opened, the first incision may have to be extended to the other side. But I now avoid making a second flap by removing not only the frontal sinus septum but also the corresponding upper portion of the bony septum nasi, thus throwing the denuded frontal sinuses and the upper portion of the nasal passages anteriorly into one cavity.

The PRESIDENT (Dr. STCLAIR THOMPSON) said the Section was much obliged to Dr. Watson-Williams for his excellent demonstration.

Mr. WAGGETT had seen Dr. Watson-Williams do the operation and was much struck with the admirable view it gave of the nose. He could make no criticism of it except a theoretical one—namely, the danger of losing the osteoplastic flap by necrosis. This was a question to be answered by results. The scars which he had seen had been excellent.

Mr. HERBERT TILLEY said for pan-sinusitis the operation seemed ideal, though he did not know that one could say so much for it when only the frontal sinus and a few anterior ethmoidal cells were involved in suppuration. With a combination operation on the basis of Killian's method, excellent results could be obtained with a less extensive procedure than Dr. Watson-Williams's operation, and the occasion had not yet arisen with him (the speaker) when the larger operation was called for. The diseased ethmoidal cells could very well be removed through the nostril. If the orbito-ethmoidal cells extended outwards to the temporal fossa, did Dr. Watson-Williams's operation render those cells as easy of access as the Killian operation? It was easy to remove the roof of the orbit by the Killian operation, especially when the ethmoidal cells extended there. It was easy to cure suppuration in the frontal sinus, but not if the ethmoidal cells were involved. The whole secret of the frontal sinus operation was to remove the adjacent and diseased ethmoidal cells.

Dr. WATSON-WILLIAMS, in reply, said that although by the Killian operation one got at these cells and removed the orbital roof, and he had done that operation a number of times, he found his own method easier. But cases varied very much. He never performed a radical operation upon the frontal sinus unless the conditions obliged him to; but when radical operation was called for, he thought it was best to make it as radical as possible. Removal of the inner orbital wall or not depended on removal of the orbital roof. If the floor of the frontal sinus was removed, the inner orbital wall must be removed at the same time. The operation he had just shown made it easier to get at the ethmoidal cells in connection with the frontal sinus, those which run out towards the orbit. The case which Mr. Waggett saw him operate upon at Bristol was a very extensive one; it extended to the right external orbital angle on both sides, and upwards nearly to where the hair began on the forehead. The patient completely recovered, with very little scarring. He had not had necrosis of the flap; an important point in this operation was that one was able to preserve the facial artery to the top of the flap. It was because he had had two cases of necrosis of the bridge in Killian operations that he felt he would like to devise another procedure. In his own method there was less chance of necrosis, and the exposure was much better.

May 3, 1912.

Demonstration of the Treatment of Malignant Growths of the Mouth and Pharynx by Diathermy.—Douglas Harmer, F.R.C.S., and H. Lewis Jones, M.D.—The apparatus was exhibited and the method of application demonstrated. A general anæsthetic is required; the operation can be completed in three to five minutes; there should be no bleeding, even with vascular tumours; there is very little pain, even after extensive burning; sloughs separate in five to ten days, leaving a healthy wound which heals rapidly; the surrounding tissues are little inflamed; there is hardly any scar-tissue after the whole growth has been destroyed, and the parts are eventually covered with soft mucous membrane; the danger of secondary hæmorrhage is said to be slight. Three cases, illustrating the after-results, were shown. **CASE 1:** *Epithelioma of Soft Palate, anterior Pillar of the Fauces and Base of Tongue; a Hard, Nodular Growth adherent to Upper and Lower Jaws.*—The patient, a man, aged sixty-four, had noticed the growth for six weeks; there had been no pain, but some trouble with swallowing. Two and a half years previously an epithelioma was removed from the lower lip. Treated by diathermy on March 24, 1911. The wound healed rapidly without pain or much scarring. There has been no tendency to recurrence until the last few weeks. There are now some nodules in the scar and some glands in the neck. The growth in this case was extensive, but yielded at once to treatment, and is an excellent result.

CASE 2: *Epithelioma of Soft Palate, Tonsil, and Tongue, undergoing Treatment.*—A labourer, aged fifty, was admitted to hospital on February 16, 1912. He had noticed a hard lump on the right side of his neck for two months, later pain in his right ear and difficulty in swallowing. A large, hard, fungating growth was found involving the right half of the soft palate, the right tonsil, fauces and tongue slightly. The growth extended across the palate to the middle line and was firmly attached to the jaws, so that the palate was quite fixed. Some hard glands were found behind the right angle of his jaw. A section of the growth showed epithelioma. February 22 and March 4 and 14, ulcer treated by diathermy, 1·2 to 1·5 amp. The patient had very little pain after the applications, the sloughs separated rapidly, leaving a healing wound with little surrounding inflammation. There was no hæmorrhage after the operations. On April 3 the glands were removed from the right side of the neck with the internal jugular vein. The wound healed normally, but fourteen days later, on his return from a convalescent home, a small abscess was found under the scar in his neck. There now appears to be no growth excepting a small mass near the tonsil and on base of the tongue; the palate moves well. The swallowing is much improved.

CASE 3: *Extensive Epithelioma of Soft Palate, Tonsil and Tongue, undergoing Treatment; Growth deeply Ulcerated*—The patient, a man, aged fifty-two, had noticed soreness of the back of the tongue and throat for three months. Two months ago a swelling appeared below the angle of the right jaw, and recently he has not been able to open his mouth properly. On April 11 he was given an extensive application of diathermy (1·5 amp.). Afterwards he had pain for two days, which was probably due to extensive burning of the base of the tongue. Large sloughs separated without hæmorrhage, and he can now open the jaw and swallow better. The soft palate is soft and moves freely. On April 24 large glands and the internal jugular vein were removed from the triangles of the right side of the neck and a group of glands from behind the right

clavicle. Six days later the wound in the neck became inflamed and a drop of pus was let out from under the scar. This case is shown to illustrate the improvement obtained by one application of diathermy.

Dr. LEWIS JONES explained that the apparatus used was a modified form of that employed for treatment by high-frequency currents. It was known that currents which oscillated at a very high speed could be passed through the human body without causing any shock or sensation even when a current of 500 m.a. or more was passing. A feature which had been partly overlooked was that the patient's tissues were warmed by the passage of such a current. Among the effects of electricity on the human body there were two main groups; there was the shock and the muscular contraction which were ionic phenomena, and there was the thermal effect. Ions moved with comparative slowness, so if the electric oscillations were rapid enough, the sensory and motor phenomena disappeared, and only the thermal remained. The apparatus now exhibited was one of the new devices for producing sustained oscillations of very great frequency. It permitted the patient to bear a current of an ampère—*i. e.* 1000 m.a.—and to feel nothing more than a comfortable sensation of warmth, which slowly spread up the arms when the electrodes were held in the hands. In order to use this heat for surgery it was necessary to concentrate it, and this was done by using a small, button-sized electrode. The heating effect was then very rapid and the degree of heating was inversely proportional to the cross-section of the small electrode, so that if one electrode was small and the other large, the heating effect was almost entirely in the region of the small one. Moreover, the heating effect was not superficial but penetrated to a considerable depth, as was shown by Dr. Lewis Jones in an experiment upon a piece of liver and of kidney tissue.

Mr. HARMER added that it was remarkable how quickly the operation could be done; apparently any amount of tissue could be destroyed, and the patient suffered very little. In a throat case the patient could swallow painlessly within twelve hours. Moreover, afterwards the wound healed over with soft tissue, and there was an absence of scarring and binding down of the parts which often followed ordinary surgical procedures. Cases besides those with malignant growths had been treated by the method, such as tonsils, nævi and innocent growths in the mouth and palate, and there had been no hæmorrhage. It would be found to be a valuable method of dealing with extensive ulcerations of the mouth. For throat cases, the larger electrode was laid on a towel placed across the front of the chest.

Mr. HERBERT TILLEY asked by what method one prevented burning into the healthy tissues; or did the process affect morbid tissues more readily than normal ones?

Dr. WATSON-WILLIAMS asked whether the small electrode was allowed to penetrate deeply. Also, whether the therapeutic effect depended entirely on the burning, or whether, beyond the area burned, there seemed to be an influence on the neoplasm. Further, he asked whether Mr. Harmer had been led to suppose that such growth could be permanently eradicated by the method.

Mr. DE SANTI congratulated Messrs. Harmer and Jones on the excellent results obtained, and presumed it was meant as palliative treatment only. It occurred to him that in early cases which were amenable to operation there might be a temptation to try this method first, and valuable time thereby lost, but in the class of case shown to-day there seemed to be a most useful field for diathermy.

Mr. T. JEFFERSON FAULDER said he had seen the cases now shown before they were operated upon. They were cases upon which no one would operate. When Dr. Nagelschmidt was in London he removed a tonsil by the method: it was a simple process, and there was no bleeding; and the difference from the other side, from which the tonsil was removed by the guillotine, was very striking. He agreed that there might be a difficulty in deciding how far the necrosis went, and Dr. Nagelschmidt said that to estimate the depth of the coagulation was a matter of experience.

Mr. HARMER, in reply, said that the degree of penetration depended on the operator's wishes. With a flat electrode one could burn the surface, and it penetrated to about the same depth as the extent of surface. A pointed electrode travelled into the tissues quite easily—indeed, the difficulty was to prevent it travelling too deeply. To avoid burning normal tissue, one should watch how far the burn was spreading. The first case was the one that had been under treatment for the longest time; this was treated at the beginning of November, and at present there were no signs of recurrence. It was not absolutely certain that this was a case of epithelioma. They had treated one case of extrinsic carcinoma of the larynx by the method, and the patient was apparently doing very well. At least half the growth was destroyed by the first application; it was made under general anaesthesia, through the bronchoscope. The patient was allowed to go out of the hospital after a week. Later, he was reported to have died of septic pneumonia. It had not yet been used by them for tubercle, but he did not see why it should not be used for the destruction of any lesion. The great point was the slight degree of sloughing. The apparatus cost about £80, but could be hired from Messrs. Siemens.

A Man unusually Tolerant and Easy of Laryngeal Examination.

—W. Stuart-Low, F.R.C.S.—The interior of the larynx and trachea can be seen simply by inserting a mirror, without the tongue being held.

Double Ethmoidal Mucocele.—A. S. Cobbledick, M.D.—A woman, aged thirty-four, has been aware of a swelling between the right side of the nose and the right eye as long as she can recollect. During the last twelve months the swelling has increased, there is a feeling of dulness, sleepiness and epiphora not noticed before the last six months. She has never suffered from diplopia. There is a tense, fluctuating swelling in the region of the right internal canthus. Over its centre the internal tarsal ligament is tightly stretched; above it extends to the orbital plate of the frontal bone, but is not attached to it. A similar but much less marked condition exists on the left side. The right nasal fossa is occluded by a large, probably cystic, middle turbinate bone.

Dr. COBBLEDICK added that the patient had some nasal discharge at times, but he had not seen muco-pus in the nose. By transillumination the antra and frontal sinuses were clear. By passing a fine lachrymal probe along the lower canaliculus one could demonstrate the lachrymal sac between the swelling and the internal tarsal ligament, which would not be the case if it were a frontal sinus mucocele.

Dr. DAN MCKENZIE said he had recently seen a patient with a bilateral swelling on the side of the nose, which proved to be mucocele of both lachrymal sacs. He himself had at first taken the disease to be ethmoidal mucocele, but on referring the patient to an ophthalmic surgeon the proper diagnosis was arrived at.

Mr. HERBERT TILLEY thought the measure first suggested by the

exhibitor should be carried out, as it should be possible to get at the ethmoidal cells from the inside of the nose. If that failed an external operation could be carried out later.

Dr. D. R. PATERSON agreed that the case should be treated from the inside. In a similar case of his own after such treatment the patient could empty it easily by pressure, and in eighteen months it had entirely ceased to appear.

Dr. COBBLEDICK, in reply, said he felt sure that it was not connected with the lachrymal sac.

Chronic Œdema of the Fauces and Larynx in a Boy.—**H. Lambert Lack, F.R.C.S.**—The patient has been attending hospital for nearly five years, and throughout that time his condition has been practically the same. The uvula was as large as a finger. This was removed for microscopical examination, but merely showed round-celled infiltration. The stump of the uvula is thickened, the pillars of the fauces are oedematous, the epiglottis is swollen, the arytaenoids, especially the left one, are so oedematous that they flap about and look like mucous polypus. Anti-syphilitic remedies have had no effect, and the diagnosis has remained in doubt. Last February the boy re-appeared at the hospital after a year's absence, and the Wassermann reaction was tested and found positive. The boy also suffered from nodes on the bones some seven years ago. He has recently been on mercurial inunctions without any improvement. I have seen similar cases, but in none of them has a positive diagnosis been made. In all the cases other evidences of syphilis have been absent. The question therefore arises as to whether the lesion in this case is syphilitic. I have seen chronic oedema in other cases of congenital syphilis, and incline to the idea that the lesion really is syphilis, in spite of the negative result of treatment.

Sir FELIX SEMON said he believed Dr. Lack agreed that the term "oedema" pre-judged the case. He himself would be cautious about saying anything more than that it was "a sort of swelling." In the similar cases of Dr. Logan Turner's and his own there was simply an increase in round-cells, and no other characteristic. In his own case there was no syphilis, which Dr. Lack believed to have been present in this case. In his own two cases the swelling receded and the patients became well after it. That was the reason he objected to the term applied by Dr. Logan Turner—namely, "sclerotic" hyperplasia—because that implied there had been interstitial changes which were remediable. The fact that the patient improved showed that the word "sclerotic" should not be applied.

Dr. DUNDAS GRANT said it seemed to be fairly well established that there was a syphilitic basis in this case. In some instances of specific keratitis, published by Mr. Sydney Stephenson, mercury and iodide failed until the administration of thyroid extract, which at once altered the appearance. This latter treatment might therefore be of use in this case.

Sarcoma of the Thyroid perforating the Trachea.—**D. R. Paterson, M.D.**—A female, aged forty-six, was admitted to hospital complaining of difficulty of breathing with swelling in front of neck for about six weeks. There was dyspnoea with cyanosis. There was a flat, hard, painless swelling over the thyroid, and involving that organ. In the larynx the cords moved sluggishly, and in the subglottic region a greyish irregular mass was seen filling up the greater part of the tracheal lumen. Tracheotomy was performed under a local anæsthetic. The

incision went through soft friable tissue, the trachea being found deeply placed, having been pushed towards the spine by the growth. A portion of the tissue showed it to be a small round-celled sarcoma. Its complete removal was considered impossible. At the end of a fortnight the growth had invaded the skin wound, and pieces of growth were coughed up from time to time. The opening was kept patent by a rubber tube. The patient died suddenly in the night about a month after her admission to hospital. The growth involved the thyroid gland and the neighbouring parts. The upper part of the trachea above the opening was filled with round masses of growth which had apparently perforated the anterior wall. Death had taken place by hæmorrhage escaping into the lungs from one of the intra-tracheal growths.

MR. DE SANTI asked whether secondary growths had been found anywhere in this case. They were very rare, but recently he had had a case in which the patient died, and a large number of secondary growths were found in the intestine.

SIR FELIX SEMON alluded to the particular fact that both sarcoma and carcinoma of the thyroid gland when perforating into the trachea became pedunculated. He had recorded a similar case in the *Transactions of the Medico-Chirurgical Society*, in which there was a huge tumour in the trachea, besides a small goitre. The case was seen by Sir Henry Butlin and others, in addition to himself. The patient, a lady, had great dyspnœa. He merely performed tracheotomy, because he considered the case unsuitable for radical operation. She returned home and came back some months afterwards because she doubted whether his diagnosis had been correct. When he saw her again the tumour, which had been of the size of a small pear and almost filled the lumen of the tube, had completely disappeared, and there was no trace of a spot from which it had sprung. The late Sir William McCormac endeavoured to perform a radical operation from without, and he succeeded in freeing the larger part of the enlarged thyroid so easily from the surrounding tissues that in the first part of the operation the narrator questioned himself whether there had not been a diagnostic mistake. But when Sir William came to the central portion of the growth he found it was indissolubly connected with the trachea and could not be removed. Free hæmorrhage followed. The patient returned home and died some time afterwards from uncontrollable bleeding from the trachea. The specimen showed a huge tumour in the trachea hanging from a very thin pedicle. Above it was a second pedicle without any actual growth attached to it. No doubt the first tumour, which Sir Henry Butlin and he had seen, hung down from a similar pedicle into the trachea, and either sloughed away or was swallowed or expectorated. The occurrence of a temporary disappearance of a tumour in such circumstances was important.

DR. D. R. PATERSON, in reply, said there was one gland, the size of a pigeon's egg, in the mediastinum, and a small nodule showing round cells in the liver. In reference to Sir F. Semon's remarks, small pieces were expelled from time to time through the tracheotomy tube almost like bullets out of a gun: and considering the slenderness of their pedicle, it was quite feasible for a strong expulsive effort to clear the trachea for the time being.

Laryngeal Stenosis.—Noel Bardswell, M.D.—Male, aged twenty-eight. History of present illness: Eighteen months ago, hoarseness, which got better; lungs pronounced clear. Three or four months—voice getting worse: some noisy breathing noticed for a few weeks.

Condition on admission: General condition favourable; temperature normal; pulse 100. Lungs: Signs suggesting pulmonary tuberculosis at right apex. Larynx: Complete aphonia; marked stridor. There is "beefy" infiltration invading the whole of both vocal cords, which overlap in anterior two thirds; there is also infiltration deep in subglottic region. Glottic space reduced to 25 per cent. of normal (StClair Thomson, January 27, 1912). Sputum: Tubercle bacilli not found. January 28, 1912: Tracheotomy performed. February 20, 1912: Wassermann reaction negative; temperature remains normal; pulse-rate reduced since tracheotomy to 84-88. April 1: Diagnostic dose of tuberculin (A.F.) 0.0002 c.c. Neither local nor general reaction. April 4: Tuberculin 0.001 c.c.—no effect. April 9: Tuberculin 0.005 c.c.—temperature rose to 100.2° F. after thirty-six hours; slight headache and general malaise. Locally, no change in condition of larynx after the injection. Lungs: Suspicion of moisture at right apex, but no definite crepitations. April 19: Sputum reduced very considerably and is now only about one tenth of former quantity. Tuberculin (A.F.) 0.01 c.c. April 20: Less stridor, no congestion in larynx, except over the shiny, beefy swelling, which replaces right vocal cord. Left vocal cord now clear and mobile; no ulceration. No local reaction after tuberculin (S.C.T.). Some general reaction, temperature up to 100.8° F.; malaise. Lungs: No evidence of local reaction; no increase of sputum.

Sir FELIX SEMON said he did not think a diagnosis was possible of its nature. There was, no doubt, perichondritis from some cause—tubercular, traumatic, or syphilitic—but there was nothing laryngoscopically to be seen except diffuse swelling of the parts and diminution of the lumen of the larynx.

Mr. HERBERT TILLEY asked whether there was any possibility of a foreign body, and if so, whether it would not be better to have a skiagram taken before doing any operation.

Dr. DUNDAS GRANT said the great fixation and infiltration indicated perichondritis. Possibly a small portion could be removed for examination. He showed several years ago a case like this, and there was, in that, enormous infiltration—apparently a new growth. But the portion removed showed simply inflammatory tissue. The case was now in the same condition as it was then.

The PRESIDENT said the man was sent to a sanatorium, and he had to do an urgent tracheotomy. The beefy congestion was removed, but he was left with a narrow glottis. There was no proof that it was tuberculous, there was no temperature, and no positive evidence of syphilis. He wondered whether exploratory laryngo-fissure should be done.

Malignant Disease of Pharynx and Tongue; Operation Two Years ago; no Recurrence.—Norman Paterson, F.R.C.S.—When first seen (May 11, 1910) the patient, a man, aged fifty-six, complained of having suffered from stiffness of tongue for five months, and he could not move it to the left side of his mouth. No trouble in swallowing. He was losing weight. On right side of tongue far back there was an indurated mass which extended on to the floor of the mouth, and mucous membrane over the lower jaw. It also involved the anterior pillar of the fauces. Microscopical report: Epithelial carcinoma. The stumps of several carious teeth were removed. May 18: Ligature of right external carotid—no enlarged glands discoverable; tracheotomy. May 23: Right cheek split back to masseter. Tongue drawn out by silk stitch. Most of posterior portion of tongue removed on the right side well wide of the

growth, and the dissection continued so as to include a portion of floor of mouth and mucous membrane over angle of jaw. The mass removed included also the pillars of the fauces and tonsil. Subsequently the parts were brought together with catgut sutures. On account of the preliminary ligation of external carotid there was very little hæmorrhage. The patient made an excellent recovery.

Tuberculous Ulceration of the Larynx.—G. Seccombe Hett, F.R.C.S.—Male, aged twenty, admitted to hospital on April 29, 1911, complaining of cough, expectoration, dyspnoea, and the feeling of a lump in the throat of five months' duration. The ventricular bands were infiltrated, the right being occupied by a large ulcer; both cords were infiltrated and ulcerated. There were very extensive signs in the chest. Tubercle bacilli in sputum. The patient was admitted with a swinging temperature which became normal after ten days' in-patient treatment. The larynx was treated locally. The condition of the larynx is now arrested, although there are extensive signs in the chest.

Laryngo-fissure for Intrinsic Carcinoma.—G. Seccombe Hett, F.R.C.S.—Man, aged fifty-four. A laryngo-fissure performed for intrinsic carcinoma involving the left vocal cord. The left cord and portion of the arytenoid removed, together with the anterior sixth of the right cord as the growth was encroaching on the anterior commissure. It is proposed to give the patient a course of exercises for the re-education of the voice.

Mr. HERBERT TILLEY said this was a private patient of his own on whom he had arranged to operate, but owing to an illness Mr. Hett operated for him. The patient made an excellent recovery, and there was no sign of recurrence. He had asked Mr. Hett to make a very free removal, and he did so. There was great loss of voice, and the case was brought now to see if anything could be done to improve it.

Mr. HARMER did not see why the patient should not have a course of voice training, especially as he was not using to the full extent the means he had. He had seen cases as bad which, after a prolonged course of treatment, had considerably improved.

Dr. H. J. DAVIS said that at the March meeting¹ he showed a case of double abductor paralysis, from which he proposed to remove the arytenoid cord and ventricular band, but he was advised not to do it because the subsequent adhesions would make the patient worse. But there were no adhesions here, and he saw no reason why they should have necessarily formed in his case.

The PRESIDENT said that the quality of voice to be expected after laryngo-fissure seemed to be uncertain, and one could not very well predict it. Moreover, some patients used their powers to the best advantage, employing the resonators better than others. He had seen the voice much improved by exercises.

Sir FELIX SEMON, in reply to Dr. Davis, pointed out that in this present case the disease had been very extensive, more so than one found in abductor paralysis, and that a good deal of tissue had to be cut away, including much of the thyroid cartilage in front, in order to safeguard against a recurrence. That made the case quite unlike one of bilateral abductor paralysis, so far as operative prospects were concerned.

Cyst of the Right Vocal Cord.—G. Seccombe Hett, F.R.C.S.—Female, aged fifty-four. Cyst of right ventricle, shown at the February

¹ JOURN. OF LARYNGOL., RHINOL., AND OTOL., June, 1912, p. 316.

meeting.¹ Symptoms then, hoarseness for twelve years. The cyst had been removed with Patterson's forceps by the direct method. Patient says that her hoarseness is no better.

Mr. HERBERT TILLEY said that three or four weeks ago he removed a cyst of the ventricle by the direct method. This was done because she was too nervous for removal by the indirect method, even after applying 20 per cent. cocaine. There was no return of the cyst, and the vocal cords were only slightly congested. If she had nitrate of silver applied to the cords, and faradism to the larynx, she might get a better voice.

Section of a Papilloma removed from the Free Border of the Left Inferior Turbinal at the Junction of the Posterior and Middle Thirds.—A. R. Tweedie, F.R.C.S.—The specimen is from a young woman who recently came to hospital complaining of nasal obstruction and asthma. Apart from this papilloma the left side was fairly roomy, but the right side was much impaired by an enlargement of the anterior ends of both lower turbinals combined with a septal spur, and the whole nose was in that state associated with chronic rhinorrhœa.

Guillotine for Enucleation of Tonsils by Sluder's Method.—Thomas Guthrie, F.R.C.S.—The guillotine had been devised in order to facilitate enucleation of the tonsils by the method first described by Dr. Greenfield Sluder. The important feature of this method was that advantage was taken of an anatomical prominence on the lower jaw—the "eminencia alveolaris"—to press the tonsil through the ring of the guillotine. As the distal surface of the ring was applied over the tonsil instead of the proximal—as in the ordinary method—he had had the blade of the guillotine reversed on its long axis, so that its bevelled surface tended to dislocate the tonsil from its bed. The whole instrument had been made very strong so as to resist the considerable pressure required. The handle had been devised so as to provide the maximum leverage. The arrangement by which the parts of the instrument could be separated for purposes of cleansing had been adopted from the guillotine devised by Mr. Hugh Jones.

Dr. VINRACE asked what special advantage was claimed for this instrument over that possessed by the Mackenzie guillotine. One could reverse the handle in the latter and get the same advantages.

Dr. H. J. DAVIS considered that all guillotines were made much too thick at the end; if the cutting ends were finer, more of the tonsil would be cut off. It must be remembered that by using excessive digital pressure one could button-hole the anterior pillar by pressing it together with the tonsil into the ring of the tonsillotome, and it was easy to injure it in this way.

Dr. WESTMACOTT said it was difficult to understand why this instrument should be better than Matthieu's ring guillotine, as the latter would go in between the anterior and posterior pillars and remove the tonsil without injuring the pillars.

Dr. KELSON said that Dr. H. J. Davis's statement that pieces might be punched out of the anterior pillars of the fauces with the tonsillotome might throw a light on certain cases of perforation of these pillars, the origin of which had been much debated. He also considered that it might be concluded from the number and variety of instruments brought forward that the removal of tonsils was one of the most difficult

¹ JOURN. OF LARYNGOL., RHINOL., AND OTOL., May, 1912, p. 281.

operations in surgery, and he asked whether any ordinary guillotine did not suffice for getting out a tonsil in fairly capable hands.

Dr. MIDDLEMASS HUNT said he had seen Mr. Guthrie use the instrument in a number of cases, and with it he removed the whole tonsil and capsule much better than with the French guillotine, which he (the speaker) had used for many years.

Mr. GUTHRIE replied that he did not claim anything original for it, but he thought the shape of the handle would make it easy to get tonsils out by the method. As a rule the tonsil was removed in one piece.

Epignathus or Teratoid Tumour of the Nasal Septum and Base of the Skull.—G. J. Jenkins, F.R.C.S.—Female child, aged one and a half. A teratoid tumour occupies and fills up the cleft of a cleft palate condition which involves the whole of the soft and posterior half of the hard palate. By the fissure on either side of the tumour a fine probe may be passed up into the nasal cavity, and the tumour is free posteriorly, but anteriorly the mucous membrane of the tumour is continuous with that on the premaxillary portion of the palate. The mucous membrane covering the anterior part of the buccal surface of the tumour has the characters of the membrane of the hard palate, but about the middle of this surface there is a projecting tooth with a crown like an irregular molar, surrounded by a membrane like that of the alveolar gum. A probe can be passed on either side of the tumour from the anterior nares into the pharynx. There is a coloboma of the iris; fundus of the eye is normal. No other deformity. The eyes are remarkably far apart and the face very broad. The patient is rickety. Teeth eruption began one month ago; tooth of tumour came first. There is no sign of mental defect so far. Takes food well, without regurgitation. Snores very badly when sleeping, and often has bronchitis.

A Patient who wore a Tracheotomy Tube for Fifty Years.—Sir StClair Thomson, M.D.—A tracheotomy tube was shown which had been worn by one patient, on and off, for sixteen years. Frequently the tube was not changed more than once in two years. Altogether the patient had worn a tracheotomy tube for over fifty years. Her case had been published in a brief note by Dr. Berridge in the *British Medical Journal*.¹ The record was so interesting that Sir StClair Thomson had written for these particulars to Dr. Berridge, who in reply also stated that the patient did not suffer from bronchitis more than other people, and that she died of senile decay at the age of eighty-one.

While we are all agreed as to the value of nasal respiration, in certain cases of laryngeal stenosis it may be wiser to put up with a tracheotomy tube than risk uncertain operations with the object of being able to do without a cannula. This case was referred to in view of the discussion at the last meeting of the wearing of a tracheotomy tube by patients with double abductor paralysis.

Mr. DE SANTI said he knew a man who wore a tracheotomy tube for seventeen years. He was in the habit of driving a coach in all weathers; he did not change the tube very often.

Dr. DAN MCKENZIE referred to a very old man who was in the habit of coming once a month to have his tube cleaned, and who had his tracheotomy done sixteen years ago for, it was said, malignant disease. The disease in the larynx, whatever it was, had now disappeared, and he could breathe in the ordinary way. On one occasion the speaker removed

¹ *Brit. Med. Journ.*, 1912, i, p. 816.

the tube and tried to induce the patient to do without it, but he became so terrified that the tube had to be replaced.

Mr. MARK HOVELL said that until two years ago he saw from time to time a man on whom he performed tracheotomy at Golden Square Throat Hospital in the summer of 1878, thirty-four years ago.

Sir FELIX SEMON said he could corroborate the statement that tracheotomy tubes could be worn, and safely, an almost indefinite time without fear of bronchitis. He could also support the statement as to the abject fear of some patients when the tube was removed. Members would remember an extraordinary case of soft fibroma of the larynx and neck which he had brought forward, and in which he had removed the growth without opening the laryngeal cavity. For several years the patient could not be got to agree to any operation, not because she was afraid of the operation itself, but because her tube was, of course, to be removed, and because she feared living without this tube, which she had had in her throat for twelve years. She was now quite well.

Dr. DUNDAS GRANT said he was much struck by the case of a girl, aged twenty-one, who had worn a tracheotomy tube continuously since early childhood on account of a huge papilloma which blocked the larynx. He removed the tube and the papilloma, and it was surprising to see the joy with which she drew a breath of air through her nose, and smelt a flower, which she had not done during all the years of wearing the tube. Breathing through the nose was a great source of enjoyment as well as safety, and it was important that a patient should do without the tracheotomy tube if possible.

Specific Ulceration of the Tongue, Nasal Septum and Larynx.

—**Andrew Wylie, M.D.**—Man, aged forty-one, an engineer, complaining of hoarseness and dysphagia. There is a hard patch on the centre of the tongue, a deep fissure with ulcerated, ragged edges. The septum is swollen, with a ragged ulcer on the left side. In the larynx there is a marked swelling on the left ventricular band covering the left vocal cord. Patient has a history of specific disease. The hard patch on the tongue at the seat of ulceration points to malignant disease.

Dr. WYLIE added that the point of interest in the case was the hardness of the ulceration, pointing to malignant disease, although all the other symptoms showed specific disease.

Mr. DE SANTI thought there should be an operation on the tongue as a preventive measure against the onset of carcinoma.

Dr. DUNDAS GRANT considered that Dr. Wylie's suspicion was well grounded; indeed, he thought malignant transformation had already set in.

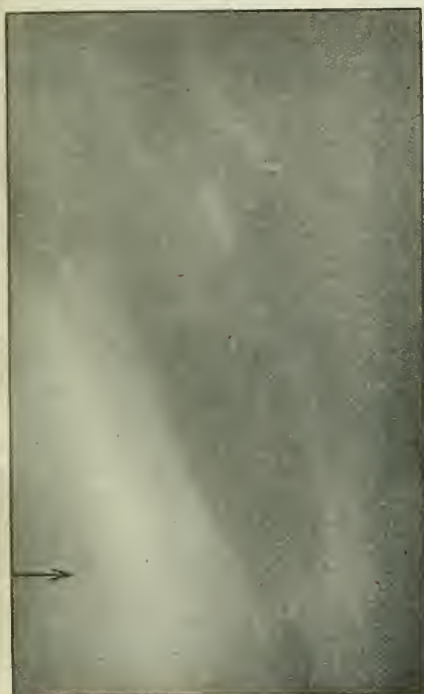
Mr. HERBERT TILLEY referred to Sir Malcolm Morris's recent paper containing illustrations of chronic syphilitic tongues, and their improvement after treatment by salvarsan. That remedy might be tried here.

Dr. H. J. DAVIS pointed out that there was also disease in the tongue and larynx, which seemed to contra-indicate an operation on the tongue. Syphilitic tongues were often made to clear up by painting with sufficiently strong chromic acid; he used a strength up to 40 per cent. He had applied this strength to tubercular ulcerations on the tongue and mouth with great benefit.

Fixation of the Left Half of the Larynx.—**H. Fitzgerald Powell, M.D., and L. Colledge, M.B.**—The patient is a married woman, aged fifty-eight. She complains of hoarseness, which she has noticed for about

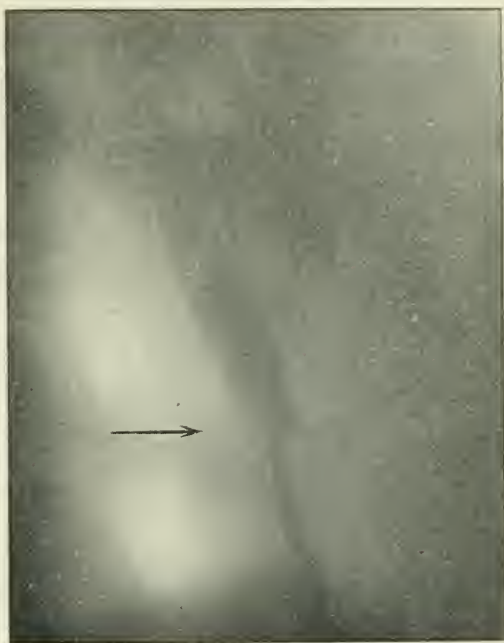
seven weeks and which has not been getting better nor worse. She has no pain nor other symptom. Her general health is good, with the exception that she has a cough. The left half of the larynx is quite immobile. The left vocal cord is red and swollen compared with the right one. The pupils are active to light and accommodation, but the left is much smaller than the right. There are some dilated veins on the left side of the neck. A skiagram of the chest is suggestive of the presence of enlarged mediastinal glands.

CASE 2.—Before.



Skiagram taken two minutes after swallowing bismuth paste; the latter is "held up" in the dilated gullet. (Reduced $\frac{1}{2}$.)

CASE 2.—After.

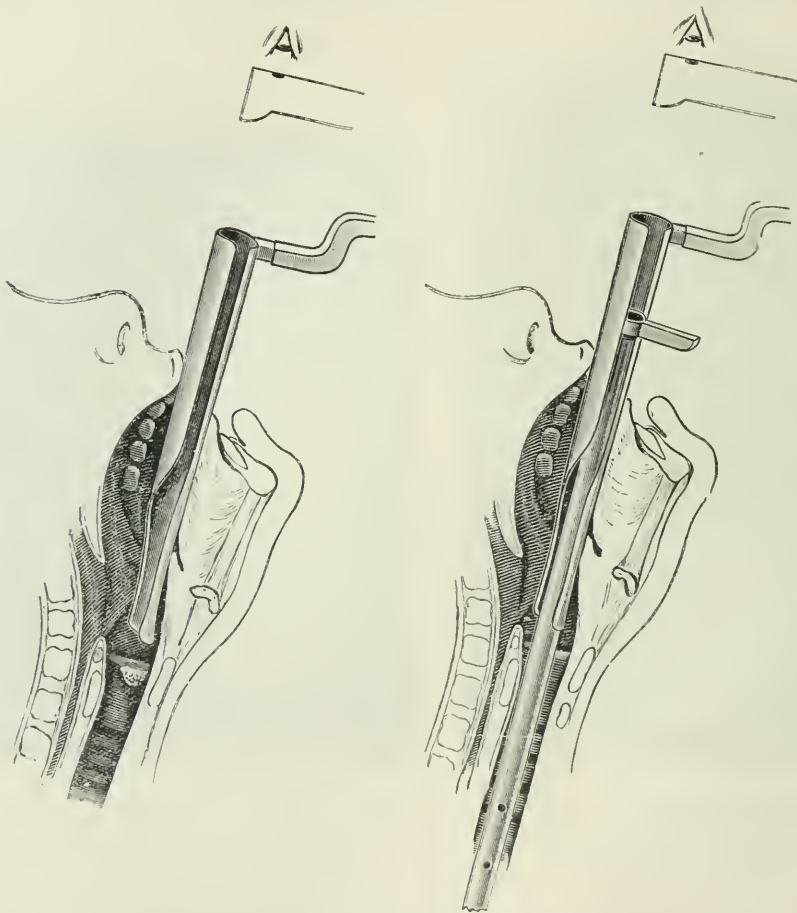


Three weeks after dilating up stricture. Skiagram taken two minutes after swallowing bismuth paste; the latter passed freely down without bulging above the stric-tured region. (Reduced $\frac{1}{2}$.)

Skiagrams Illustrating the Treatment of Non-malignant Stricture of Gullet by Endo-oesophageal Mechanical Dilation.—**William Hill, M.D.**—**CASE 1:** A male, aged thirty-one, suffered from a large general dilatation of the oesophagus above a spheno-cardiac stricture, which was well brought out in the skiagram. After endoscopic bougieing and dilation with Brünings' dilator the bismuth paste was a week later seen to pass slowly in bulk through the now fairly open cardia, and the dilatation appeared to be reduced one third in diameter. **CASE 2:** A female, aged sixty, with a cicatricial stricture 2 in. above the diaphragm, was similarly treated, and the bismuth paste, which was long held up

before treatment, after dilation passed fairly freely down, and was not "held up" for any time, when examined three weeks later.

Instruments to facilitate Per-oral Tracheo-bronchoscopy.—**William Hill, M.D.**—The left-hand figure shows the exhibitor's large funnel-shaped endoscope for the larynx and pharynx in the laryngeal vestibule of a child, aged ten. The lateral slot not only permits of binocular vision and easy instrumentation when operating on the larynx,



but it also facilitates the rapid passage of a tracheoscope or bronchoscope in cases where (1) there is dyspnea from spasm, etc., during operations on the larynx, more especially in children. (2) For *per-oral* tracheo-bronchoscopic explorations where there is difficulty or delay in finding the contracted laryngeal vestibule, more especially when working with a narrow bronchoscope alone in children. (3) To relieve at once, without resorting to tracheotomy, the temporary spasmodic dyspnea which sometimes supervenes on administering an anæsthetic in cases of laryngeal and tracheal obstruction. A tracheo-bronchoscopic tube is shown in the right

hand figure within the slotted laryngoscope, and it differs only from a Killian tube in that the proximal end of the instrument is a little less thick to admit of its easy passage through the laryngoscope, and the distal extremity (not shown in the diagram) is slightly bevelled to facilitate its passage through the spasmodically closed glottis, and if possible to avoid the use of a guide, which Killian often finds necessary with his non-bevel-ended tubes. The adult-size slotted laryngoscope shown has been successfully employed by the author in quite young children for laryngeal operations, as well as to facilitate tracheo-bronchoscopy.

Bilateral Œdema of the Ethmoidal Septum in Sinus Suppuration.—**Dan McKenzie, M.D.**—The patient, a young man, is shown to illustrate the type of septal œdema to which allusion was made at a recent meeting of this Section.¹ The ethmoidal portion of the nasal septum on both sides presents a smooth, rounded, and boggy swelling, which on the right side is so considerable as to occupy the whole of the upper meatus of the nose. Microscopical examination by Dr. Wyatt Wingrave shows that the swelling is due to simple inflammatory œdema.

Mr. DE SANTI considered the diagnosis correct. He had shown a similar case in which he thought the patient was suffering from either hæmatoma or gummatous deposit, but some of the members criticised that diagnosis and considered it was chronic inflammation. The patient was treated on that idea and got well.

Bony Growth of the Nose and Naso-pharynx.—**Middlemass Hunt, M.B.**—The patient, a female, aged forty-four, came to hospital complaining of increasing nasal obstruction of six months' duration, accompanied by diffuse headache, pains in the back of neck and loss of smell. On anterior rhinoscopy the posterior part of the right nasal passage was seen to be blocked by a smooth, pale pinkish growth attached by a broad base to the upper part of the septum. On the left side there was a diffuse elevation or deviation of the septum corresponding to situation of the growth on the right side. On posterior rhinoscopy both choanæ were seen to be filled with growth which hid the upper part of the septum and projected slightly into the naso-pharynx. The colour of the growth in this situation varied from pale grey to slaty blue. On palpation the growth presented a bony hardness. There were no enlarged glands, no hæmorrhage or deformity, but malignancy was suggested by the clinical history of the case. Opinions were invited as to the nature of the growth and the best method of removal.

Mr. DE SANTI considered that one could not diagnose it without removing a portion. The rapidity of the growth was in favour of osteosarcoma. It should be operated upon, though the procedure would have to be an extensive one, either through the mouth by splitting the palate, or from the front and letting the nose down, or a combination of the two. It might even be necessary to detach the whole of the upper jaw.

The PRESIDENT considered that these growths could be reached by an enlarged Rouge's operation or a Moure's operation, going through the upper part of the ethmoid and antrum. This would bring the operator nearer the growth, and there would be less hæmorrhage than by turning down the nose.

Mr. HERBERT TILLEY thought a favourable feature in the case was

¹ JOURN. OF LARYNGOL., RHINOL., AND OTOL., May, 1912, p. 272.

that the growth did not project into the naso-pharynx. One could feel the surface of the growth in the right posterior choana, and there was no protrusion of the eye. He had had two such cases; one a chondrosarcoma, which recurred, and he expected the patient was now dead; the other case was an osteo-sarcoma. He agreed with what the President said as to the method of operation, and there would be an ample view of the growth by making a long incision along the junction of the gum with the cheeks and turning up the soft parts of the face. But the anæsthetist must not use a gag or pull out the tongue, for that would stretch the face down. The operator must put in a laryngotomy tube and plug the lower part of the pharynx, and anæsthetise through the laryngotomy tube. In this particular case tight plugging of the naso-pharynx might alone be sufficient.

Dr. WATSON-WILLIAMS said the advantages of approaching by the method mentioned by Mr. Tilley were mainly for growths involving the maxillary antrum, and which did not extend high up into the ethmoid. It was undesirable to abandon the higher route, and when dealing with sarcoma the question of leaving a scar was of secondary importance to that of thorough operation. He advocated an osteoplastic operation from above, to clear out the ethmoidal cells, by the method he had described by the external route.¹

Dr. MIDDLEMASS HUNT, in reply, said the case was unique in his experience. It was remarkable for the rapidity with which the nasal obstruction had increased and for the intense hardness of the growth. From the clinical history he did not think it was an osteoma, and it did not accord with the description of osteomata found in the text-books. He thought it must be malignant, probably osteo-sarcoma. He thought it could be reached by Rouge's method, but he was not certain about the relation of the upper part of the growth to the base of the sphenoid. There were no symptoms except pain in neck and loss of sense of smell.

PROCEEDINGS OF THE SCOTTISH OTOLOGICAL AND LARYNGOLOGICAL SOCIETY.

Meeting in the Royal Infirmary, Glasgow, May 11, 1912.

Dr. J. KERR LOVE *in the Chair.*

Reported by the Hon. Secretary, Dr. W. S. SYME (Glasgow).

(Continued from p. 389.)

Treatment by Split Tooth-plate to widen the Nasal Passages instead of Resecting the Nasal Septum during Adolescence.—James Adam, M.D.—J. B—, aged fifteen. Asthma frequent and severe for eleven years. Septal ridge in right nostril. The split plate expanded palate 3 mm. in two months and 1 mm. more in the next two months. Nasal respiration improved; asthma practically cured.

¹ Vide *Proceedings*, 1908, p. 116.

Boy, aged ten. Asthma since infancy. Adenoids removed some years ago, but he continued a mouth-breather. Septal ridge in right nostril. Expansion by split plate 3 mm. in three months, 4 mm. more in next two months. Patient now sleeps with mouth shut, and both he and his parents are satisfied as to improvement in nasal breathing. Anti-toxaemic treatment has been followed by disappearance of asthma.

Dr. LOGAN TURNER said that these two cases related to a subject which was, perhaps, too much neglected by the rhinologist. In America orthodontia was being carried out more systematically than in this country and with excellent results. The mechanism by which improved nasal respiration followed the alteration in the shape of the palate had given rise to discussion. Some held the opinion that the pressure of the plate caused increased growth of the bone, while others maintained that an actual separation of the two halves of the palate occurred at the mesial suture, a result which X-ray photographs appeared to prove. An increase in the transverse diameter of the nasal cavities could be thus explained.

Dr. ADAM said there was no doubt the nasal respiration was improved, and he did not think it wise to resect the septum in a growing patient if one could avoid it. In answer to Dr. Howie he said there was a certain degree of deviation of the septum in both cases.

Pneumococcic Infection of the Nose and Mouth.—P. N. Grant, M.B.—The patient, when first seen two years ago, was suffering from destruction of the cellular tissue at angle of nose and of part of the lower lateral cartilage. Bacteriology, pneumococcus. Vaccine prepared and used, and the condition cleared up rapidly. On April 23, 1912, that is, two years later, the patient returned with a large abscess cavity opening through the soft palate and left tonsil. Pneumococcus again found. A similar vaccine is again being used.

Dr. MILLIGAN and Dr. MACKENZIE BOOTH considered this a case of syphilitic ulceration, and suggested that a Wassermann should be done.

Ulceration of Floor of Left Nostril and of Left Side of Septum.—P. N. Grant, M.B.—Male, a worker in chemical manure works. There is ulceration of anterior third of the floor of left nostril and of neighbouring part of septum. The skin of nose is hyperæmic and tense. Bacteriological examination of swab gave pneumococcus, Friedländer's bacillus, *Micrococcus catarrhalis*, staphylococcus. Vaccine prepared and used every seven days from April 15th; yellow oxide of mercury ointment locally.

Female, aged forty-two with an Extensive Venous Angioma affecting the Right Side of Forehead, Nose, Upper Lip, and Right Half of Palate.—Walker Downie, M.B.—A somewhat similar case was shown by Dr. Porter at last meeting in Edinburgh.¹ The present patient had been under exhibitor's observation for twenty years, during which time practically no change had taken place in the condition.

Female, aged forty-five, with a Soft Swelling on the Left Side of the Nose Externally.—Walker Downie, M.B.—A similar case was shown recently in London,² and was thought by some to be a

¹ JOURN. OF LARYNGOL., RHINOL., AND OTOL., February, 1912, p. 111.

² *Ibid.*, June, 1912, p. 328.

lipoma, by others a cyst. This case was a somewhat deeply seated venous angioma.

Lateral Sinus Thrombosis; Operation; Ligature of Jugular; Recovery.—**J. Galbraith Connal, M.B.**—Female, aged thirty-one. History of discharge from right ear of four years' duration. Pain in ear for a fortnight with cessation of discharge. Three days before coming under observation she had a shivering attack, followed by sweating. No sickness or vomiting. When first seen as an out-patient there was a large polypus blocking the meatus. This had been noticed for three months. Temperature 102.4° F., pulse 115, tongue furred, pupils small; reaction sluggish to light and accommodation. Pain in front of and behind ear. Tenderness on pressure over mastoid, but no swelling. The polypus was removed. That night she had a severe rigor, lasting half an hour, followed by profuse sweating. In the morning she had another slight rigor. On that day she was admitted to the hospital. Temperature 103° F. and next morning her temperature was normal, but rose at 4 p.m. to 106° F. There was no optic neuritis.

Operation.—Radical mastoid; bone sclerosed; antrum small and deep-seated. An extra-dural abscess was present over the tegmen, and, on working backwards this was found to communicate with a perisinus collection. The posterior wall of the mastoid was removed and the sinus exposed for some distance. Four days later, as she complained of tenderness along the course of the jugular, and as the temperature still showed marked oscillations, the vein was ligated and divided. The sinus was further exposed, opened, and drained. Patient gradually recovered. Cultures from the pus from the mastoid wound yielded *Staphylococcus albus*, *Bacillus pneumococcus* (Friedländer), bacillus of colon group, bacillus of Morgan, No. 1.

Large Aural Exostosis.—**J. Galbraith Connal, M.B.**—The patient, a male, aged thirty-four, came with a ceruminous collection blocking the meatus. Watch, 9 in. After removal of the plug, 16 in. He had slight pain, but no symptoms indicative of suppuration. As there was a small chink still and as there were no urgent phenomena he did not propose to operate. At the meeting in Glasgow last year he had drawn attention to the history of inordinate bathing in many of these cases. Such a history was not present in this case.

Prolonged Adductor Spasm in Two Brothers.—**A. Brown Kelly, M.D.**—The younger boy, then aged three, began to have inspiratory stridor in October, 1910. A month later he was examined by direct laryngoscopy, and the vocal cords were found close together, with only a narrow chink between. On pushing the tube through the glottis the stridor ceased. X-ray examination of chest negative; von Pirquet negative. Subsequently inspiration became so noisy that he disturbed the ward and had to be kept in room by himself. In January, 1911, cyanosis, retraction of lower lateral parts of thorax, and moist râles throughout the chest. Tracheotomy. Catarrhal pneumonia gradually cleared up. Tube kept in for five weeks. Since then his breathing has been slightly stridulous when crying or on exertion, but has never been such as to cause anxiety. The older boy, then aged five, was brought to the exhibitor early last year, as his mother thought his condition was becoming like that of his young brother. Slight inspiratory stridor was readily excited. Adenoids removed. In April, 1911, the appearances on

direct laryngoscopy resembled those of bilateral abductor paralysis. In October, 1911, no improvement; 32 respirations per minute; face perspiring; only one tooth in lower jaw, and no sign of others. Left vocal cord was found stationary in mid-line, and right vocal cord imperfectly abducted. In December, 1911, during early stage of anæsthesia (chloroform was used for all the examinations) stridor was increased, vocal cords coming together on inspiration and falling apart with expiration; later they sometimes kept slightly apart, and at other times almost normally apart. A twin brother of the older boy, who had crowing several times at night, was examined, but nothing abnormal was found in his larynx. All three boys are much below the normal size, and are very rickety. The twins hear well, but their speech is defective and unintelligible.

Dr. MILLIGAN said he would have diagnosed this condition as abductor paralysis, but the fact that it cleared up put that out of account and they must call it spasm.

Dr. SYME said these cases were of great interest in relation to the general question of laryngeal stridor in children, a question which was still unresolved. To call it laryngismus stridulus did not advance one's knowledge. It was probable that as more of these cases were examined by the direct method it would be found that in a large proportion the stridor was due to spasm of the cords rather than to weakness of, or changes in, the framework of the larynx, such as sucking in of the aryepiglottic folds, or falling in of the wings of the thyroid cartilage; that, in fact, the cause was central.

Dr. FULLERTON remembered a number of years ago being called to a child who, thirty-six hours after birth, had had a series of spasmodic attacks of the larynx—the breath became shorter and shorter until the child became cyanosed, and then it got better. Tracheotomy was performed and the tube kept in for four days, and the child got better. The child was under three days old when it was done. The breathing was quite right afterwards and nothing further occurred.

Dr. ADAM said it seemed to him that these cases were closely connected with laryngismus stridulus, which was quite different from congenital stridor. Laryngismus stridulus was asthma of the larynx, and, like asthma, it could be evoked by diet. A medical friend once asked him to see his child, who seemed at first to have bronchitis, but later the child was seized with several attacks of laryngismus stridulus. The father found he could produce asthma in his child by feeding it on milk puddings and jam. These cases could be produced by vicious diet and could be cured by proper feeding. The relationship between some cases of asthma and rickets was not a direct one, but both were due to errors of nutrition.

Dr. BROWN KELLY replied that he thought at first it was an abductor paralysis, but the clearing off showed that it was spasm. The defective speech was part of the cerebral disturbance.

Compression Stenosis of Bronchi and Œsophagus.—A. Brown Kelly, M.D.—Man, aged twenty-seven, consulted exhibitor on April 24, 1912, complaining only of hoarseness of five weeks' duration. Laryngeal examination showed left recurrent paralysis with compensatory action of right cord. X-ray examination revealed large shadow opposite upper four ribs to right of sternum, and on left side that of the large vessels extended abnormally far outwards. Œsophagus, 23 cm. from dental arch, was found obstructed by a smooth, lobed bulging of the anterior wall.

Left main bronchus was occluded by flattening and apposition of anterior and posterior walls; the bronchoscope could be pushed a short distance between them, but on withdrawal they again fell together. Lumen of right main bronchus was somewhat encroached upon by flattening of anterior wall. Abnormal pulsation was nowhere observed. On questioning patient, he admitted having had for three weeks a little difficulty with deglutition and breathlessness on exertion. The underlying disease is probably a rapidly growing neoplasm in the posterior mediastinum.

Dr. FRASER had seen a somewhat similar case. Tracheotomy had been performed before he saw it. Bronchoscopic examination revealed a great deal of narrowing just about the bifurcation and a small fungating growth in the left bronchus, and a piece of this was removed for diagnostic purposes. At the *post-mortem* a mediastinal sarcoma was found which was compressing the lower part of the trachea and the left main bronchus and had eaten through into the latter.

In reply Dr. KELLY said the question was whether the growth was a neoplasm or an aneurysm. The absence of pulsation and the contour of the skiagram seemed to indicate a neoplasm.

Congenital Inspiratory Stridor.—A. Brown Kelly, M.D.—

Female infant, aged twenty months; croaking or snoring inspiration since birth, but gradually getting less. Varies from time to time. Thorax shows signs of obstructed inspiration. Direct laryngoscopy revealed the following conditions: Long tapering epiglottis, rolled backwards so as to bring the ary-epiglottic folds almost into apposition; during inspiration the arytenoids were sucked forwards, the flaccid tissue on their summits made to vibrate, and the glottis reduced to a small quadrangular opening.

Dr. PETERKIN inquired if the cords were sound and their action normal.

Dr. SYME remarked that, according to the mother, the croaking sound was not worse if the child was excited or put out.

Dr. LOGAN TURNER said that Dr. Brown Kelly's explanation of congenital laryngeal stridor appeared to take us a step further than the explanation put forward by Dr. John Thomson and himself. Dr. Kelly, he said, admitted that the ary-epiglottic folds came almost into apposition. Was that not enough in itself to produce the stridor? Was it, therefore, necessary to assume that the vibration of the flaccid tissue on the summits of the arytenoids was the responsible element?

Dr. BROWN KELLY, replying, said that the vocal cords were quite normal. He thought a number of conditions gave rise to inspiratory stridor. His case was one of a distinct class, and the anatomical appearances were such as he had mentioned, one of the most striking being the sucking forward of the arytenoids. The noise was due to the vibration of the loose tissue on their summits. The child shown croaked only occasionally now as she was approaching two years of age, when the condition usually cleared up.

Rhinitis due to Gonococcus.—A. Brown Kelly, M.D.—Female infant, aged four months, has had discharge from right eye and right nostril since birth. The nasal secretion is usually thin, but occasionally purulent. No vulvo-vaginal discharge. Dr. John Anderson reports that the gonococcus is the prevailing organism in the discharge from both nose and eye. Exhibitor understood that it was very difficult to distinguish the *Micrococcus catarrhalis* from the gonococcus. The condition

was being treated by resorcline drops, but if it did not improve a vaccine would be used.

Bony Occlusion of Posterior Nares in an Infant, aged two months.—**W. S. Syme, M.D.**—The mother's attention was drawn to the nasal obstruction by the fact that the child was unable to breathe while taking the breast. Both nostrils are occluded; sticky purulent discharge collects, especially in the left nasal fossa; and on examining with a probe through either nostril, and the finger in the naso-pharynx, no communication is found. The bony occluding septum is distinctly felt by the probe. The case was shown with a view to eliciting opinions as to the advisability and prospects of operation.

Dr. BROWN KELLY said he had operated on a girl of five or six years, but the opening had quickly closed. A submucous resection of the posterior part of the septum was advisable, but he would refer Dr. Syme to an important paper by Dr. Fraser on the subject.

Boy showing Fenestration of Faucial Pillars, probably Congenital.—**W. S. Syme, M.D.**—The boy had never had any trouble with his throat, inflammatory or otherwise. He had not had scarlet fever.

Posterior Ethmoidal and Sphenoidal Sinus Disease; Abscess of Brain; Leptomeningitis; Death.—**W. S. Syme, M.D.**—Female, aged twenty-five. Nasal and post-nasal discharge for a considerable time. For a month before admission increase in discharge; severe headache on vertex, nausea, and occasional vomiting. Shivering at times; and the night before admission she had a severe rigor. Eyes examined by Dr. Rowan: "Congestion of both discs with tortuosity of veins." Admitted to hospital February 23, 1912. Patient dull and answered questions slowly; but this was thought to be her usual habit. She looked ill, but times had been bad with her, and she was poorly nourished. Large amount of yellow discharge observed by posterior rhinoscopy coming from right posterior ethmoidal and sphenoidal region. Pus observed by anterior rhinoscopy on anterior wall of sphenoidal sinus. Middle turbinate removed under cocaine. Destruction of bone was then observed, and there was a quantity of broken-down tissue in the posterior ethmoidal region. This was removed, and had the appearance of brain-tissue mixed with thick discharge. On examination a large opening was seen in what appeared to be the roof and external wall of the sphenoidal and posterior ethmoidal cell. The ragged dura mater bulged into the cavity, and there was marked pulsation. A large opening was found in the dura mater, and through this a guarded probe passed backwards and slightly upwards for a distance of $5\frac{1}{2}$ in. from the anterior nasal spine. The cavity was mopped out, evident shreds of brain-tissue coming away, and it was then swabbed out with iodine solution. Temperature 99.4° F., pulse 88. The temperature rose to 101.4° F. in four hours, and the pulse to 110. Subsequently the temperature fell almost to normal, and remained so for two days, when it rose rapidly to 104.6° F., the pulse being 96. Headache was relieved for two days, and then returned with increased severity. Nausea and vomiting at intervals. Nystagmus was present from admission; coarse towards the right side and fine when patient looked towards the left. Cold water in left ear much increased the nystagmus to right, and in right ear somewhat increased the fine nystagmus to left. Stiffness of neck complained of, photophobia

knee-jerks somewhat increased, and slight Kernig. Changes in optic discs more marked. The mind remained exceptionally clear. Lumbar puncture performed on two occasions gave exit to only a few drops of cerebro-spinal fluid, only slightly cloudy. Examination of this yielded some broken-down cells but no organisms.

The question of attempting to reach the brain abscess by an external operation was considered, but in view of its position and the great probability of there being concomitant leptomeningitis it was negatived. Mr. Nicol saw the patient a few hours before her death and concurred in this view. The drainage into the nose was kept free by mopping. The probe showed that the abscess extended more deeply, passing in $6\frac{1}{2}$ in. from the nasal spine the day before death. She became unconscious eighteen hours before death, and died eight days from the time of her admission.

Post-mortem Examination.—Extensive basal meningitis over pons, cerebellum and medulla. Pus in all the ventricles. Opening in roof of posterior ethmoidal cell half an inch in diameter, and bone in neighbourhood dark coloured. Ragged opening in dura. Contiguous part of brain showed surface destruction, and from this a track, which admitted a lead pencil, led backwards just beneath the under surface of the brain till it opened into the third ventricle. A thin pyogenic membrane lined part of this track. The right olfactory bulb and nerve were destroyed, but there was no evident meningitis on the under surface of the frontal lobe.

Specimens, etc.

Drs. J. S. Fraser and J. R. Milne Dickie showed a reconstruction model of the middle and inner ear of a foetal pig (length of pig, 7 cm.).

Dr. Walker Downie showed six photographs of an unusually large external fibro-cellular tumour of the nose, before and after operation, which occurred in a man, aged sixty-three. Operation in September, 1907.

AUSTRIAN OTOLOGICAL SOCIETY.

January 29, 1912.

PROF. V. URBANTSCHITSCH *in the Chair.*

(Abstract of proceedings from advanced proofs sent by
Dr. HUGO FREY.)

Polyneuritis Cerebralis Ménièreiformis (Frankl-Hochwart) after Salvarsan.—**O. Beck.**—Patient was a man, aged twenty-eight. Infection May, 1911. Pustular exanthem, July, 1911, for which he was treated in the skin clinic—eyes, ears and other organs healthy—with ung. Cin. and KI followed by an intra-venous injection of 0.4 grm. “606.” Temperature 39.8° , rigor, diarrhoea, headache. September: injection repeated without any adverse symptoms, discharged much improved; Wassermann (formerly positive) now negative; to continue taking NaI. Towards the end of October, sudden left facial paralysis, giddiness,

staggering, vomiting, headache, severe tinnitus left side, diplopia. Admitted to the hospital, mercurial injections, rest in bed. Wassermann positive. November: Involvement of left auditory nerve, Cv. at 4 m., Whp at $\frac{1}{2}$ — 1 m., total lack of response in left vestibular apparatus. Paralysis of all three branches of facial with lack of both galvanic and faradic response. Present condition: Left side, total lack of response of vestibular apparatus and nerve-deafness. Facial paralysis as above. Right side, slight rotation reaction, caloric response depreciated, hearing normal. No disturbance of equilibration or spontaneous nystagmus (which latter had been noticed towards the left), slight Rombergism with eyes closed.

A somewhat similar case which occurred in a man, aged thirty-eight, after two injections of salvarsan was also related.

Polyneuritis Cerebralis with loss of Caloric Response but Persistence of Rotation Reaction.—O. Beck.—A man, aged twenty-nine, infection one and a half years ago. Salvarsan 0.3 grm. intra-venously, February, 1911; intra-muscular injection of the same amount, March, 1911. Fourteen days later marked giddiness, vomiting, disturbance of equilibration and loss of hearing on the right side. In November the following note was made: Right side, total deafness; left, Cv. at 6 m., Whp. $\frac{3}{4}$ m. Caloric response—right absent, left typical. Rotation evoked normal nystagmus about the same each way. Very slight spontaneous nystagmus in both directions. Total facial paralysis (? right). Hypalgnesia in region served by the right trigeminal. Mercurial treatment had up to the present time produced no alteration in these conditions.

Certain authors had described similar attacks of polyneuritis as being produced by syphilis, but Beck did not wish to discuss this point further than to state that whereas such conditions due to this disease alone were extremely rare, he had already seen it occur five times after the exhibition of salvarsan.

Further Communication towards our Knowledge of Serous Labyrinthitis.—Ruttin.—A boy, aged ten, stated to have been in good health previously, was admitted to the hospital January 4, 1912, complaining of headache and earache on the right side for two days; he had also felt giddy and had vomited once. Left ear, normal in appearance and function. Right ear, posterior segment of membrana tympani appeared to be replaced by adherent scar-tissue; membrane elsewhere injected, swollen, macerated and bulging. Deaf to both Cv. and forks. Weber to the left; Schwabach shortened. Spontaneous nystagmus to the left. Caloric response quite lost. No fistula symptom. Tender over the mastoid apex, antrum and region of sinus, also over the cervical vertebrae, but both active and passive movements here possible. Pupils equal and reacting to light and accommodation. All reflexes apparently increased. Dermography. No Kernig. No ataxia. No obvious alteration of sensation. Temperature 37.4° pulse 104. Ocular fundi normal. Internal organs normal. Lumbar fluid clear but under high pressure.

Diagnosis.—Purulent labyrinthitis with incipient meningitis, or tuberculous meningitis with exudation into right inner meatus. Exploratory operation the next day: Mastoid pneumatic; sinus healthy; scattered granulations in antrum suggesting acute otitis, but in view of the appearance of the membrana tympani, and in order to inspect the labyrinth wall, the complete operation was carried out. Examination of this, however, with tonogen revealed nothing abnormal. Tuberculous meningitis was therefore suspected and the labyrinth not explored.

Two days later the nystagmus disappeared and the patient felt well. By the sixth day Cv. easily a.c. tested with noise apparatus. Weber to the right, Rinne negative; no fistular symptom or spontaneous nystagmus; caloric reaction prompt. Report on lumbar fluid negative. Distinct facial paresis. General condition good.

Ruttin concluded that the case must have been one of serous labyrinthitis following on acute otitis media. It was interesting to compare this case with another quite similar one at its commencement, which he had shown to the Society on another occasion, but which, however, ended quite differently, in that complete deafness and loss of caloric response on the diseased side still persisted.

In the discussion which followed ALEXANDER and FREY submitted that in the present state of our knowledge the diagnosis of serous labyrinthitis depended on the ultimate re-establishment of the cochlear and vestibular functions, and BÁRÁNY added that this uncertainty as to the differential diagnosis between serous and purulent labyrinthitis was due to the fact that as yet it was not known whether the serous condition was merely toxic in origin or caused by an infection reduced in virulence. To make a diagnosis, however, entirely by the result of the case he condemned as wrong in principle and apt to be inaccurate. The whole clinical picture should be utilised towards framing an opinion, and he, for his part, would regard the other case of Ruttin's, in which the hearing was not recovered, as still one due to serous labyrinthitis. ALEXANDER denied that he had said the diagnosis should rest entirely on the final condition of the case, and considered that serous labyrinthitis fell into two groups, the one occurring in the course of acute otitis and being itself acute in character and transitory in effect, and the other being an exudation in connection with a chronic otitis and causing a permanent loss of function in an already injured labyrinth.

RUTTIN, in reply, stated that the duration of the attack, as some had suggested, could not help towards the diagnosis, as both serous and purulent labyrinthitis might last about the same time, viz. three to fourteen days, and still contended that the predominant factor in the differential diagnosis must at present be the ultimate state of the case as regards the re-establishment or not of function.

A Case of Scar Carcinoma in the Periosteum of the Mastoid Process.—Ernst Urbantschitsch.—A paracentesis was performed on a man, aged sixty, in March, 1911, for relief from an attack of acute otitis media; no pus was found, but as the inflammation continued to increase the antrum was opened in April, granulations being disclosed. All went well for three weeks, when severe and increasing headache occurred in spite of all treatment, the patient losing 45 kg. in weight. By August the general condition had recovered and the headache disappeared, but in December it recurred in such a degree as to prevent sleep. On examination a soft swelling the size of a nut was now found at the upper end of the post-aural wound. This was removed in January. The tumour was free from the skin, originated in the periosteum—the adjacent bone being much eroded—and its general appearance suggested sarcoma; but the later microscopical report described it as a squamous-celled carcinoma.

The exhibitor considered that it must have been the result of some inclusion of the skin at the original operation.

Hyper-excitability of the Vestibular Apparatus.—F. Alt.—Under

this title the author drew attention to certain conditions other than those which he would describe as hyper-æsthesia, such as severe vomiting, giddiness and nystagmus, due to injudicious application of the caloric and rotation tests, and which more rightly belonged to the domain of physiology. To illustrate his views he quoted cases of middle-ear catarrh in which inflation, even gently performed, evoked severe symptoms, and also others in which the radical operation had been carried out, and where, during post-operative manipulation, the utmost delicacy was required to prevent labyrinthine disturbance. (The object apparently was to attempt a distinction between hyper-æsthetic states of the labyrinth in otherwise normal ears, and an unusual condition of excitability in connection with pathological circumstances.)

In the lengthy discussion which followed, FREY, RUTTIN, BÁRÁNY and NEUMANN took part. As Alt himself had pointed out, exaggerated symptoms in connection with neurotic people were known to all, and as regards the excessive reactions in pathological cases, these might be explained by assuming either some sudden alteration in the state of the labyrinth fluid, as by inflation in chronic tubo-tympanic obstruction, or by the loss of its normal protection in post-operative cases. The "fistula symptom" would serve to elucidate some of these conditions, although, however, it must be admitted that there remained many phenomena in connection with the vestibular system for which at present no explanation could be offered. The possible co-existence of intra-cranial tumours in these cases should be borne in mind. It was obvious that a very cautious attitude was adopted towards this differentiation and terminology as suggested by the author.

Alex. R. Tweedie.

Abstracts.

NOSE.

Gerber (Prof.).—The Vestibule of the Nose, and the Treatment of Lupus. "Münch. med. Wochens.," November 21, 1911, p. 2501.

In this short contribution to the International Rhino-Laryngological Congress in Berlin, September, 1911, Prof. Gerber emphasises the importance of a careful examination of the orifice of the nose, particularly of the upper angle at the junction of the skin and mucous membrane, in cases of facial lupus. It is there, the author believes, that lupus involving the nose and face has its origin in a very large proportion of cases. Dr. Gerber uses a small mirror devised by himself for examining the upper part of the vestibule of the nose, and he has repeatedly found lupus nodules in that situation even when no other evidences of the disease were present or when the cutaneous lesions were regarded as healed. The active co-operation of the rhinologist is therefore of great importance if there is to be an effective campaign against lupus and tuberculosis.

J. S. Fraser.

Barraud, A.—Two Cases of Rhinolith. "Revue Med. de la Suisse Romande," August, 1911.

Foreign bodies in the nose are common, but rhinoliths, according to Dr. Barraud, are rare, only 160 having been reported in the whole of medical literature. The first of the two cases here recorded was a

woman, aged seventy. She had suffered for six or seven years from the ordinary symptoms of a foreign body in the nose. This, on removal, was found to be a rhinolith, measuring 2.5 cm. by 1.3 cm. by 1.5 cm. The outer layer of the rhinolith consisted of carbonate and phosphate of calcium; the nucleus was a cherry-stone. The second case seems hardly to deserve to be called a rhinolith, as it was merely a boot-button which had been in a child's nose apparently for a few months, and was not yet completely coated by the lime-salts.

Arthur J. Hutchison.

Leroux, Robert (Paris).—Dangers of Menthol in Rhinology. "Annales des Mal. de l'Oreille, du Larynx, du Nez, et du Pharynx," vol. xxxvii, Pt. II.

The author classifies the baneful results arising from the use of menthol under three headings—hyperacute, acute, and chronic. The first are the most frequent and serious; they have only been met with in sucklings and young children who have been treated with mild mentholised preparations (strength 1 per cent. to 2 per cent.) for coryza. The symptoms experienced have been sudden intense dyspnoea, threatening asphyxia, cyanosis, imperceptible pulse, faintness, hypersecretion of mucus in the nose, throat and larynx, and convulsions. Death happened in one case, and was only averted in the others by prompt treatment. Cases observed by Killian, Mayet, Armand-Delille, Gomet, Ruffier, Pujol, the author and others are recorded in detail. These troubles attending the use of menthol are attributed to (1) spasm of the glottis, induced either by direct contact, through dropping, into the larynx or reflexly from irritation of the nasal mucosa. (2) Hypersecretion of mucus in the upper air-passages from reflex stimulation of the vaso-secretory nerves, determining asphyxia and comparable to drowning. (3) Reflex inhibition of the heart and respiration from irritation of the nasal nerve branches. An inflamed mucosa favours this action (Killian). The author concludes that mentholised preparations should be rigidly proscribed in the case of children under three years, and that the individual susceptibility of patients above that age ought to be considered and the strength of menthol adjusted accordingly. The treatment advocated consists in (a) ridding the respiratory passages of mucus by hanging the head downwards and aspiration of the discharge; (b) artificial respiration with rhythmical traction of the tongue; (c) general revulsion, hot baths and sinapisms. Under the heading of acute troubles, cases of acute conjunctivitis and pseudo-erysipelas observed by Triboulet are mentioned, also pharyngeal cough and reflex otalgias noted by Laurens. Withdrawal of menthol brought about a cessation of these troubles. Chronic affections which are frequent have consisted of erythema of the lip and nares and chronic turbinal hypertrophies located usually at the anterior ends of the inferior bodies. The latter condition has been met with in subjects who have gradually become addicted to the abuse of mentholated preparations of increasing strength for long periods. This hypertrophy is not recovered from by abstaining from the use of the medicament and is only amenable to surgical treatment.

H. Clayton Fox.

Freeman, J.—Further Observations of the Treatment of Hay-fever by Hypodermic Inoculations of Pollen Vaccine. "Lancet," September 16, 1911, p. 814.

A sequel to Noon's paper on hay-fever (*Lancet*, June 10, 1911). A table of 20 cases is given. Of these, 2 were "eminently satisfactory,"

9 were "satisfactory," 3 were "fairly satisfactory," 1 "disappointing," 1 "inconclusive," 1 "failure" and 1 is described as "no test." As far as the author can ascertain, one kind of pollen is not more active in one than in another case, so that, apparently, different types of pollen need not be selected for treating different patients. *Marleod Yearsley.*

Sturm, F. P.—Nasal Obstruction due to Osteomata of the Posterior Nares. "Brit. Med. Journ.," March 16, 1912.

Boy, aged eleven, with deafness and complete nasal obstruction. After removal of tonsils and adenoids, digital examination revealed a



dense bony enlargement of the posterior end of each inferior turbinal. Each was the size of a cherry, and so dense that neither spokeshave nor saw made any impression. *Dan McKenzie.*

PHARYNX AND ŒSOPHAGUS.

1. Winslow, C. E. A.—An Outbreak of Tonsillitis or Septic Sore Throat in Eastern Massachusetts and its Relation to an Infected Milk Supply. "Boston Med. and Surg. Journ.," vol. clxv, p. 899.
2. Darling, E. A.—Clinical Aspects of the Epidemic of Septic Sore Throat in Cambridge. *Ibid.*, vol. clxv, p. 904.
3. Richardson, M. W.—An Epidemic of Tonsillitis due to Infected Milk. *Ibid.*, vol. clxv, p. 907.
4. Goodale, J. L.—Observations on the Epidemic of Sore Throat Occurring in Boston and Vicinity during May, 1911. *Ibid.*, vol. clxv, p. 908.

These four papers require to be taken together, as each is the complement of the others, supplying information lacking in its fellows. It appears that in May, 1911, there was a sudden increase in cases of acute tonsillitis in parts of Boston and its suburbs, the increase in the cultures examined in the health laboratories being 100 per cent. It became realised quickly that most of the families affected used a single milk supply. The dairy company called upon Winslow to make a thorough study of the situation, and the first paper deals with his work upon the records of 1400 cases. The disease differed from ordinary tonsillitis, appearances varying from diffuse redness to characteristic white patches, or even a diphtheria-like membrane formation. The most striking feature was secondary gland enlargement, sometimes with sepsis, etc.—Winslow compares it to English "septic sore throat." The local geographical distribution is discussed, with the epidemiological characters of the outbreak. The incubation period appears to be from two to three days. As very few secondary cases derived by contact occurred, it is to be concluded that the disease was almost non-contagious. It was notably concentrated in the affected households, and women were much

more attacked than men (71 per cent. to 29 per cent.). Children were comparatively free, more than half the cases being young adults from sixteen to forty-five. The severity increased with age, most of the fatal cases being in persons over fifty-five. Winslow obtained records of ninety-six fatal cases, making a mortality of 6·8 per cent. Discussing the cause, it is stated that none but milk supply appeared adequate to explain the observed phenomena. The geographical distribution coincided closely with a single milk supply, and examination of the coincidence between milk supply and disease in the individual household gives evidence of a causative relation which is "irresistible." Precautions taken at the dairy to guard against infection are described.

The second paper is based upon 555 cases. Darling points out that nearly all the cases occurred in well-to-do families living in the best residential parts and in the most favourable hygienic surroundings. The organisms found were streptococci, often with staphylococci or pneumococci. The relation of sex was, males 30 per cent., females 70 per cent.; and 314 cases were between twenty-one and sixty years of age. The period of incubation was from thirty-six to seventy-two hours. Clinical history showed sudden onset, with sore throat, painful deglutition, and moderate fever, often preceded by chills, headache, and prostration. Nausea, vomiting, foul breath and anorexia were common early symptoms, and in children gastro-intestinal symptoms were often more pronounced than the throat symptoms. Complications occurred in one quarter of all cases. They were, in order of frequency, abscess formation in or near the throat, inflammation of serous membranes (arthritis, endocarditis, peritonitis—all fatal—and pleurisy), pneumonia (eight died out of eleven), functional digestive disturbances, hæmatemesis, entero-colitis, acute endocarditis, acute nephritis, erythema, headache and delirium (one case of intense mental excitement followed by manic depression), neuritis. Twenty-seven deaths occurred, 9·4 per cent of which were between forty-one and sixty and 31 per cent. over sixty. Darling summarises the unusual features of the epidemic as (1) its extraordinary virulence; (2) the comparative immunity of children; (3) the high mortality among the aged and infirm.

The third paper is a short one by the Secretary of the State Board of Health, and is illustrated by a chart showing the relation of the milk supply to the houses attacked. It shows that, whilst the particular dairy only supplied 13·8 per cent. of the total number of houses, 61 per cent. of the total cases occurred in houses thus supplied.

The fourth paper is based upon Goodale's own cases and points out two facts—the extreme infectiveness of the milk and the remarkable tendency of the infection to serious complications. The primary infection occurred in the lymphoid tissue of the fauces and pharynx (one case, whose tonsils had undergone complete fibrous metamorphosis, had acute inflammation of the posterior pharyngeal wall). When recovery occurred without complications, marked prostration and slow return of strength were noted.

None of the papers speak of treatment, but H. L. Chase, in the discussion which followed their reading at the Suffolk District Medical Society, stated that success had attended the use of streptococcus vaccine; Garland said that ice was very valuable and cold baths most useful in pericarditis.

MacLeod Yearsley.

EAR.

McKimmie, O. A. M.—The Selection of Cases of Chronic Suppurative Otitis in which Ossiculectomy is Indicated. "Annals of Otol., Rhinol., and Laryngol.," vol. xx, p. 454.

The author discountenances the Heath operation, and is "firmly convinced" that hearing is improved, or not made worse, by ossiculectomy. He gives as *contra-indications* for the latter operation—(1) contracted meatus; (2) cholesteatomata; (3) recurrent or persistent labyrinthine symptoms; (4) foul discharge of greater quantity than could be produced in the middle ear; (5) caries of roof of posterior part of attic; (6) caries of posterior superior part of tympanic ring. The *indications* are given as (1) caries of ossicles; (2) intractable discharge, not more than could be produced in the middle ear; (3) Shrapnell perforation, with odorous discharge and marked deafness; (4) recurrent granulations; (5) adherent malleus with marked deafness; (6) large reniform perforation with ossicular remains blocking attic; (7) recurrent middle-ear vertigo caused by thickened discharge or granulation pressing on round window.

Macleod Yearsley.

Blackwell, Hugh B.—A Preliminary Report of some Two Years' Experience in Modified Blood-clot Surgery of the Mastoid Region, with Presentation of Cases. "Annals of Otol., Rhinol. and Laryngol.," vol. xx, p. 450.

It is stated that three essential factors make for success in all modified blood-clot operations on the mastoid, viz.: (1) General condition of the patient; all conditions of low vitality make poor subjects. (2) Operation and operative technique: rapid performance, thorough curetting, marked lowering of the posterior bony meatal wall, and a final myringotomy, with packing with plain gauze dipped in normal saline. (3) Post-operative care and dressing: first dressing of wet saline gauze, completely filling the concha (none in the wound), followed by loose layers of wet gauze over all. First dressing in twenty-four to thirty hours, with removal of posterior drain. Thirty-three cases are reported.

Macleod Yearsley.

Welty, Cullen F.—Improved Technique of the Thiersch Graft following the Radical Ear Operation. "Journ. Amer. Med. Assoc.," vol. lvii, p. 12.

A series of twelve cases is reported in which the graft was applied at the time of the operation. In a previous article eighteen cases were reported.¹ The author considers that the results of the second series are better even than the excellent results of the first series, simply because he was more thorough in removing the mucous membrane of the tube and floor of the tympanum, and also because he lowered the inferior bony meatus so that it was absolutely on a plane with the floor of the tympanum.

There are several features in the operation which are essential to the successful use of the skin-graft:

(1) Thorough cleansing of all the cells, leaving a smooth cavity with hard walls. A burr was found very valuable.

(2) The floor of the meatus and the facial crest should be on a level with the floor of the tympanum cavity.

(3) Absolutely all the mucous membrane in the mouth of the tube

¹ See JOURN. OF LARYNGOL., RHINOL., AND OTOL., June, 1911, p. 292.

and tympanum must be removed and the walls of the tympanum left smooth and hard. Burrs are used here, and no depressions or recesses are permitted to exist.

The meatal flap favoured is the Neumann plastic, the upper and lower flap being sutured in place and the point of the V sutured to the auricle. Hot saline, hydrogen peroxide, and a solution of the supra-renal gland are used to control all hæmorrhage. A pledget of wool soaked in the latter drug is then placed tightly into the cavity while the grafts are prepared. In the preparation of the leg from which the grafts are taken no bichloride solution is to be used. Three or four grafts are taken $\frac{1}{2}$ in. wide by $1\frac{1}{2}$ in. long, also some smaller ones. When the grafts are ready the packing is removed, and if all oozing has not ceased it must be completely controlled, otherwise the grafts will not hold.

The first graft is fastened with a searcher into the tube, bringing it out over the floor of the tympanum cavity posteriorly; the second, superior to the first, is brought back over the facial canal into the mastoid cavity; the third usually covers the remaining wall of the attic and antrum. The remaining uncovered areas are then covered by some of the smaller pieces of graft. Small pledgets of cotton are now placed over each graft to fix it, and a dry tampon over all. Externally to this is another tampon saturated with 0.5 per cent. solution of phenol in paraffin oil. The posterior wound is now closed and the usual outside dressing is used.

The ear tampons are removed on the fourth day. Hydrogen peroxide may be used to facilitate their removal, and has not been productive of harm, contrary to the usual teaching. One must make sure he has removed all the cotton balls which lie next to the graft; counting them in the first place will help. The author has had no trouble from the grafts adhering to the tampons; the outer layer, however, may come and leave a pink layer behind.

Two days following the first dressing a bichloride douche is given, and the ear thoroughly dried and boric powder blown into the ear. Simple cleansing of the ear and thoroughly drying daily forms the usual after-treatment. The results are as follows:

In the first eighteen cases in which the graft was put in four days after the radical operation, the duration of after-treatment varied from three to six weeks. Of these cases thirteen contained cholesteatoma. In all cases but one audition was greatly improved; one was the same after as before the operation. The whisper was used as the test. The average age was twenty-five years, and the discharge existed from childhood in ten cases and from one to twenty years in the remainder.

The second series (grafting at the time of operation) showed the following: All the cases healed in either three or four weeks, except one which took ten weeks. No mention of cholesteatoma was recorded in the operation findings, caries alone being recorded. The average age was thirty-five years, and discharge existed from childhood in all cases but five, where it varied from one to fourteen years. The improvement in audition was very marked.

There are recorded the histories of thirteen cases giving the appearance of membrana, tympanum, tuning fork tests, etc., which enhance the value of the paper very materially.

Perry Goldsmith.

MISCELLANEOUS.

J. Safranek (Budapest).—Blood-Vascular Tumours in the Upper Air-Passages. "Zeitschr. f. Laryngol.," Bd. iv, Heft 3.

Most of the so-called hæmangeiomata of the upper air-passages are not true tumours, but merely dilatations of existing vessels. The following varieties are distinguished: (1) Telangiectasis (profuse irregular dilatation of capillaries and small veins); (2) cavernous angioma (composed of blood-spaces); and (3) racemose arterial aneurysms. (1) occur most frequently in the skin as nævi, but may occur in mucous membranes, in which case they are usually multiple: they may cause hæmorrhage if situated on the bleeding area of the nasal septum. Safranek considers that they are always congenital. (2) He also thinks that cavernous angioma are due to congenital abnormalities, although they may arise late in life; they occur in the mouth, pharynx and larynx as round or oval tumours of red or blueish colour; the surface is uneven; the swellings are characteristically compressible and vary in size. They may occur on the turbinals, or septum or floor of the nose; on the uvula, faucial arch and walls of the pharynx; they are rare in the larynx according to Chiari, but may occur on the cords or ventricular bands. Safranek points out that fibromata, myxomata and sarcomata may show vascular changes which resemble angioma. (3) Racemose arterial aneurysms are commonest at the back of the tongue, on the palatal arches posterior wall of pharynx, and pyriform sinus. Hæmorrhage from these tumours may be mistaken for hæmoptysis. Safranek describes three cases: The first was one of simple venous angioma of the pharynx and larynx: the swellings had never caused pain or bleeding; in the second case the left vocal cord was the seat of an angioma (possibly a fibroma with vascular change); while the third was one of cavernous tumour of the right arytaenoid. The writer deals shortly with the methods of treatment and their dangers and difficulties. Severe bleeding after removal of a laryngeal angioma by the natural passage may necessitate tracheotomy and laryngostomy.

J. S. Fraser.

Hölscher (Berlin).—A Case of Rhinoscleroma cured by Salvarsan "Archiv für Laryngol.," vol. xxv, Part III.

The patient, a young man, aged twenty-five, had suffered from the disease in a characteristic form for seven years. The parts involved were the right inferior turbinal, the larynx, and the trachea almost as low as the bifurcation. Respiration was much impeded. Syphilitic infection was denied and Wassermann's test was negative. Apart from operative removal of the diseased tissues from the right nasal cavity, treatment consisted only of the intra-venous injection of salvarsan, 0.4 grm. Three weeks later, although the nasal disease showed a definite tendency to heal, that in the larynx and trachea did not appear to have been much influenced. On again examining the patient, however, after a further period of five weeks, the writer found to his surprise that the nose was completely healed and that the larynx and trachea no longer showed a trace of the disease.

Thomas Guthrie.

REVIEWS.

A Manual of Diseases of the Naso-pharynx. By CHAS. A. ADAIR DIGHTON. M.B., F.R.C.S.Edin. London: Baillière, Tindall & Cox, 1912. Pp. xiv + 168, 5 coloured plates and 68 figures. 10s. 6d. net.

That it would not be long before the naso-pharynx could boast of a whole book to itself was to be expected, but the time which has elapsed since the study of that region, by means of special instruments, began in this country has not been sufficiently long for the production of a reliable handbook. Hence the work under review is unsatisfying. The importance of the naso-pharynx and of its relation to the ear is, however, very great, and for some months past attention has been drawn to it by various able lectures and articles. The inventions of Holmes's electric nasopharyngoscope and Yankauer's speculum have given a great impetus to the study of the post-nasal space and have opened up wide possibilities as to treatment. We cannot agree that the speculum of Yankauer is "most useful for rough diagnosis under an anæsthetic," and we regard it as even more useful than Holmes's instrument, valuable as is the latter.

In a work professing to deal with the naso-pharynx, it is a pity that the author should have thought fit to devote 44 out of 168 pages (of which 7 are occupied by full-page illustrations, leaving 161 for text) to methods of examination of the ear and nasal chambers, functional tests of the hearing, and the "conservative mastoid operation" of Heath, so-called, methods which can hardly be considered as coming under the title of the book. The author's admiration for one British aural surgeon is so enthusiastic and goes to such lengths as to give his name to a head-mirror which was originally figured in an early edition of Lennox-Browne's "Diseases of the Throat." This enthusiasm is accentuated by the figuring of the Siegle speculum, as modified by Dr. Peters, without any mention of that gentleman's name.

In the description of the operation for adenoids we strongly disapprove of the advocacy of the "reversed marked Trendelenberg" position, nor do we think that the removal of these growths by means of a punch worked "under the guidance of the nasopharyngoscope" is at all a good or efficient method. The position described is one which is likely to favour septic ear complications by the accumulation of blood and mucus in the naso-pharynx.

The book is, on the whole, well got up, but the coloured plates of conditions seen with Holmes's instrument are very far from even approaching that gentleman's own pictures, and the text illustrations of similar nature are very crude.

Macleod Yearsley.

Diseases of the Ear, Nose and Throat, Medical and Surgical. By WENDELL CHRISTOPHER PHILLIPS, M.D. With 545 illustrations, including 31 full page plates, some in colours. Philadelphia: F. A. Davis Company. London: Stanley Phillips, 23, Creighton Road, Queen's Park, N.W. 1911. Pp. 847.

We, in this country, are fast becoming acquainted with Transatlantic writers whose style approaches what we vain would claim to be British in its characteristics of even balance and thoroughness. And Dr. Wendell C. Phillips, as the volume now before us proves, is eminently typical

of this class of author. In addition to that, his book also manifests what we have long acknowledged to be a special feature of the American textbook—excellence of illustration.

There is indeed little that the critic can say about the book which is not of praise. Perhaps the section dealing with the ear strikes one as being the most complete, nevertheless the other sections leave little to be desired. And everywhere the reader will feel satisfied by the moderation and sense of the author's opinions. These qualities are clearly shown in the cautious allusion which is made, for example, to the use of the Bier treatment in mastoid suppuration, and in the warning—so emphatic indeed as to constitute it a condemnation—against the Ballenger operation for removal of the ethmoidal labyrinth.

In nearly every department Dr. Phillips is well up-to-date. But we observed a few rather unexpected omissions. We could not find, for instance, in the section on mastoid operations any mention of the use of iodine in the pre-operative preparation of the skin, and in dealing with the indications for submucous resection of the nasal septum the author has omitted one of the most important, that, namely, of providing by this means a free access in cases of nasal sinus suppuration. We were also surprised to find that Mr. Arthur Cheate's work on the influence of the structure of the temporal bone upon ear suppuration seems to be unknown to Dr. Phillips.

The illustrations, as we have already indicated, are clear and educative, those depicting skiagrams of the nasal sinuses being particularly worthy of commendation. Figure 125, on page 214, however, which bears the legend, "Subperiosteal Mastoid Abscess," is surely a photograph of an abscess under the temporal fascia.

These minor criticisms having been duly noted, all that remains for us to do is to congratulate author and publisher alike upon a solid work, which we can confidently recommend as compendious and accurate.

Dan McKenzie.

THE CLASSIFICATION AND PREVENTION OF DEAFNESS.

A SERIES of lectures on the Causes and Prevention of Deafness is being delivered under the auspices of the National Bureau for Promoting the General Welfare of the Deaf by Dr. J. Kerr Love at the Royal Sanitary Institute. Lord Justice Fletcher Moulton presided on Thursday, June 27th.

Dr. Kerr Love began by pointing out that acquired deaf-mutism was due chiefly to three diseases: scarlet fever, measles, and meningitis, the last being the most important. Meningitis caused over 10,000 deaths annually in England; it was almost always infectious, and, except when it was epidemic and was called spotted fever, it was never notified. Dr. Kerr Love pointed out that though municipalities spent large sums of money in isolating and treating cases of scarlet fever and measles, they seldom thought it worth while paying for special skill in treating the ear complications of these diseases whilst the child was in hospital, and children were often dismissed with discharging ears which gave rise later in life to complications which killed them. Referring to the medical inspection of school-children, the lecturer gave it as his belief that in dealing with ear discharge the greatest good would be done by

having aural school clinics within the school and under the supervision of specialists. The present system of taking such cases to hospital dispensaries was wasteful. Summing up, Dr. Kerr Love indicated the immediate steps to be taken for the prevention of acquired deafness to be: (1) The management of the ear-complications of the infectious diseases by otologists. (2) The notification for the purpose of study and treatment of all forms of meningitis. (3) The medical inspection and treatment of the ear diseases of school-children by otologists.

Passing on to the classification of deafness for the purposes of prevention, the lecturer divided deafness into: (1) Cases in which the deafness is undoubtedly acquired after birth. (2) Cases of sporadic congenital or infantile deafness. In these there were no cases of deafness either in the direct line or in the collateral branches of the family, although a brother or sister might be deaf. Many of these cases were, of course, congenital. (3) Cases of true hereditary deafness. These were all congenital, and the deafness was present in other branches of the family. There were two fallacies to be got rid of: (1) That the possession of a deaf brother or sister was by itself any proof of the heredity of the deafness of a deaf-mute child. (2) That slight deafness amongst the relatives of a deaf-mute child was any proof of the heredity of the deafness. There was no disease which commonly appeared in one generation as hardness of hearing and in another generation as deaf-mutism. If these restrictions were applied it would be found that the hereditarily deaf were a very small class. The conclusion might be drawn, however, that backwardness was commoner amongst those whose deafness was congenital without being hereditary, and that true hereditary deafness was seldom associated with mental backwardness or physical inferiority.

As a correct classification must be the basis of any serious attempt to prevent deafness, Dr. Kerr Love said: "We must make the pathology of deafness, and not the date of its occurrence, the basis of classification; we must have a strictly scientific definition of what the term hereditary as applied to deafness means; we must have a much better admission schedule, giving not only a careful record of the personal and family history, but containing the results of a careful clinical examination of every deaf child." Concluding, the lecturer contended that the institutions must extend their scope. The institutions for the deaf began as asylums for the deaf; now they were well-conducted educational establishments, but they must help to prevent deafness. The spirit of research must fill the institutions.

The remaining lectures will deal with syphilis and deafness and with hereditary deafness.—J. K. LOVE.

BOOKS RECEIVED.

- Patologia, Anatomia, etc., della Tonsilla Faringea.** By *Dott. Francesco Malfese*. Presso Cesare Pavesio in Dottor Luigi Libreria Medica. Torino, 1911.
- A Manual of Diseases of the Naso-Pharynx.** By *Chas. A. Adair Dighton*, M.B., F.R.C.S.Edin. London: Baillière, Tindall & Cox, 1912. Royal 8vo. Pp. xiv + 168. With 5 coloured plates and 68 figures in the text. Price 10s. net.

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**SEROUS MENINGITIS, CHOKED DISC, AND MULTIPLE POLY-
NEURITIS OF CERTAIN CRANIAL NERVES IN A YOUNG
ALCOHOLIC SMOKER.¹**

BY DR. J. N. ROY,

Oto-rhino-laryngologist to the Hôtel-Dieu of Montreal (Canada).

THE following case report is of interest not only to the laryngologist, but also to the ophthalmologist and the neurologist. This is owing to the fact that the patient under observation suffered from blindness, deafness and total paralysis of the palate and laryngeal hemiplegia as a result of intoxication from alcohol and tobacco. There developed likewise serous meningitis and choked disc. We have tried to find in medical literature a similar case, but in vain. We think that this intoxication with its symptom-complex is, if not unique, at least extremely rare.

CASE REPORT.—O. L—, aged twenty-three, was brought to us at the Hôtel-Dieu, Montreal, on April 22, 1909. He informed us that after having imbibed a large quantity of alcohol and having smoked a great deal, he became suddenly blind, that his hearing became impaired, and that, on eating, food regurgitated by the nostrils. His family history showed that his father enjoyed excellent health, and his mother died of pulmonary tuberculosis. Apparently there was no nervous diathesis. Apart from the ordinary diseases of childhood, the patient had never suffered from any malady other than those produced by alcohol and tobacco.

¹ Paper read before the Congrès français d'oto-rhino-laryngologie, Paris, May, 1912.

From the age of nineteen he smoked and drank immoderately. From twenty to twenty-three he grew worse, drinking sometimes thirty glasses of gin and inhaling seventy-five cigarettes a day. During these three years he was subject to epileptiform attacks, which came on sometimes twice in twenty-four hours. After these attacks the patient would take a few weeks' rest and then recommence his alcohol and tobacco excesses with renewed vigour. A year ago, at about the same date, he had a slight touch of toxic amblyopia which gradually disappeared. His constitution was very robust, his digestion excellent, and it was owing to this that he resisted so long.

Towards the end of March, 1909, after ten days' excess in tobacco and alcohol, the patient began to complain of headaches. These increased steadily. He noticed in the first week of April that his sight was not as good as before. After three days, during which he drank and smoked enormously, he found on the morning of April 19 that he was stone blind. During these periods the patient drank only gin, never methylated spirits. The cigarettes were of the "Sweet Caporal" brand, and were smoked by inhaling. On March 20 he could see nothing; on the 21st he began to see a little. There was vomiting. No constipation, chills, delirium or convulsions. Although there was no buzzing of the ears, his hearing was less clear than before. On the 22nd, when we saw the patient for the first time, he found, on trying to eat, that the food regurgitated through the nostrils. On examining the eyes we found that the pupils were dilated, but reacted slightly to light. The ophthalmoscope showed slight double optic neuritis with distended blood-vessels. Otherwise the fundus was normal. At a distance of one metre the patient could count fingers with either eye. The muscles of the eye worked well. No nystagmus. The sensitiveness of the conjunctiva and cornea was normal. Anterior rhinoscopy showed on the left side a deviation of the septum, and on the right hypertrophic rhinitis. Anosmia was not present. On examination of the pharynx we found total paralysis of the palate, which had dropped symmetrically. The voice was nasal. Sensibility was not impaired. Considering the aetiology of the affection, electrical examination to complete the diagnosis was considered unnecessary. Posterior rhinoscopy showed hypertrophy of the posterior ends of the turbinates. The tongue, as regards motility, sensibility and taste, was normal. On examining the larynx we found paralysis of the right posterior crico-arytenoid muscle. The corresponding vocal cord was fixed in a median position. This explains the fact that the voice was not changed. The right arytenoid was slightly tilted forwards. The sensitiveness of the larynx to a probe remained normal. There was no pertussis-like cough, no tachycardia. No change in the motility of the sterno-mastoid or trapezius. The outer ear and tympanum were normal on each side. Although deaf, the patient heard no buzzing noise. At a distance of two metres only he could hear a watch which should have been heard at six metres. Tests made with whispering voice corresponded in results with the tests made by the watch. The Weber test was normal, and the Rinne test positive. Gelle's test also was positive and Schwabach's test showed shortening. Barany's hot-water test showed no lesion of the vestibular system. On examining the face we could detect no trouble, either motor or sensory. The temperature was at 37.7°C , the pulse 65. Apart from headache the patient complained of stiffness of the back of the neck. Kernig's sign was positive. All the other organs and reflexes were normal. No paralysis or symptoms of hysteria and no signs of tuberculosis or lues. The urine was normal on analysis.

As choked disc was observed, a lumbar puncture was indicated. This was performed at once, and about 20 c.c. of spinal fluid, which was under light pressure,

was withdrawn. Examination of this fluid showed a fairly large number of lymphocytes and polynuclears with a predominance of the latter.

The symptoms taken all together allowed us to make a diagnosis of serous meningitis and multiple neuritis of the cranial nerves brought on by alcohol and tobacco poisoning.

My *confrère*, Dr. Dubé, followed the case with us, and we found it of a great interest. In order to allow him to eliminate these toxins as quickly as possible we prescribed milk diet, a cup of hot water early each morning, injections of sulphate of strychnine, ten drops of a 1 per cent. solution per day, and application of ice to the head.

The effect of the lumbar puncture was to improve his eyesight the following day, but as the headache did not appear to subside quickly enough, another lumbar puncture was performed. The intra-dural pressure was marked, though not so great as on the first puncture, and examination of the liquid showed it to be the same as before.

May 1st.—Since yesterday the headache has disappeared, likewise the vomiting, which was never a marked feature. Temperature, 37.3° C. It has not been higher than 38° C. since the beginning of the illness. Bowels move regularly. The stiffness of the neck has disappeared, and Kernig's sign is no longer positive. Vision without correcting glasses has increased to $\frac{1}{4}$, and the disc has improved in appearance. There is no central scotoma, and colours are distinguished normally. The hearing, however, remains the same. There is no improvement in the hemiplegia of the larynx, or in the paralysis of the soft palate, and feeding is difficult.

May 8th.—The papillary oedema and the circulation of the fundus have improved. Refraction shows:

$$\text{R.E.} + 0.50 + 0.25 \quad 105^\circ \text{V.} = \frac{1}{2}.$$

$$\text{L.E.} + 0.50 \quad 1.20^\circ \quad \text{V.} = \frac{1}{2}.$$

The patient can hear the watch at a distance of three metres. Slight movement of the palate and right vocal cord. Temperature and pulse normal.

May 15th.—The discs are dull, the oedema has disappeared. Vision with glasses is $\frac{2}{3}$. A watch can be heard at a distance of 4.50 metres. The soft palate on both sides is relatively mobile, and the right vocal cord dilates fairly well.

May 25th.—The patient is discharged from the hospital perfectly well. His eye, ears, palate and larynx are now in a normal state, and these organs have again acquired the maximum of their physiological functions.

The report which we have summarised merits, we feel, a brief consideration. Serous meningitis, described for the first time in a thorough manner by Quinke in 1893, has not been accepted by all physicians. It is not our intention to attack or defend the arguments for or against this disease. But the presence of the symptoms we have first described—headaches, vomiting, Kernig's sign, stiffness of the muscles of the neck, increased pressure of the intra-dural liquid, and the presence of a fairly large number of lymphocytes and polynuclears in this liquid—makes it difficult, we think, to deny the existence of meningitis in this case. As during the illness there was only a very slight rise of temperature, as the symptoms were mild, as no microbes could be found in the cerebro-

spinal fluid, as the patient was quite well of his meningeal symptoms after an illness of only eight days, we are forced to classify it as being serous. The nicotine, and especially the alcohol absorbed in great quantity by a subject already intoxicated by them, not only affected certain cranial nerves but also caused an increase of the cerebral spinal fluid and the consequent symptoms. Moreover, it would be difficult by any other hypothesis to explain the presence of this meningitis and the rapidity with which it improved. The disappearance of the polyneuritis after the elimination of the alcohol and nicotine also makes us accept the above explanation as the most probable.

The eyes are of great interest. If we go back a year we find, according to the patient's story, that he had already suffered from toxic amblyopia which was not severe and which cleared up without treatment. When we first examined him his sight was very bad as he could count fingers at a distance of only one metre. However, the ophthalmoscope could show no lesion of the fundus, except an inflammation of the disc of medium intensity. As this affection alone has not usually the effect of producing symptoms so alarming from the point of view of the sight, and especially as the patient was blind during two days' time, we must find a cause other than the œdema of the disc to explain this transient amblyopia abnormally great in proportion to the papillary œdema. A careful examination allows us to affirm that the case was not one of hysteria. As it would be extremely unlikely that an embolism of both central arteries of the retina co-existed, there was no other means of explaining this blindness—apart from injury and poisoning by methylated spirits—than to admit that in addition to the inflammation of the disc there was also an acute intoxication of the optic centres. Thus our patient, after absorbing for three days a great quantity of alcohol and nicotine, awoke on the fourth day stone blind. During the following two days elimination began and the nerve centres regained their functions, the eyesight returning to a small degree. In the following days when all the poisons had left the system and the discs had regained their normal appearance, and when by the withdrawal of a quantity of cerebro-spinal fluid which by the increase in pressure had compressed the optic nerves, the eyes in five weeks gradually returned to normal. We may remark that during the whole course of the illness the patient never suffered from central scotoma. He had no difficulty in recognising colours, which is contrary to what we always find in cases of toxic amblyopia when the optic nerve alone is affected.

As regards the deafness, we believe that there existed a neuritis of the auditory nerves which was also of alcohol and nicotine origin. The examination of the tympanic membranes was negative, and acoumetric tests made it evident that the middle ear was intact. The patient never experienced buzzing or vertigo, the Eustachian tubes were normal, and Bárány's test proved that the functions of the vestibular system were perfect. As the deafness—characterised only by a sensation of blocked ears without any other auditory symptoms—occurred in a non-hysterical patient who had never suffered from his ears, and whose condition improved gradually with the elimination of the alcohol and nicotine poisons concurrently with the disappearance of the other symptoms of polyneuritis, it is difficult not to accept the hypothesis of toxic neuritis of the auditory nerves. The auditory centres may have been affected, as the deafness came on rapidly at the same time as the blindness.

If we now analyse the mechanism of the total paralysis of the soft palate, together with hemiplegia of the larynx, but with no other motor troubles, we see that our patient cannot be classed with those presenting the syndrome described by Avellis, Schmidt, Jackson and Tapia. Granting that the whole of the soft palate and the right side of the larynx are affected we find ourselves in the presence of a modified Avellis. The spinal accessory nerve which innervates these two sets of muscles was, on the right side, affected on a sufficient length of this nerve to produce the syndrome of Avellis. On the left side the other spinal accessory was affected only in the part situated above the plexiform ganglion, the pharyngeal branch to the palate alone being affected, the branch going to the larynx remaining untouched by the inflammatory process. As the right vocal cord was fixed in the median position, and as the left moved normally, the voice never changed.

Casting a quick glance over the most frequent causes of paralysis of the cranial nerves, we meet the following: syringomyelia, polio-encephalitis, bulbar apoplexy, tabes, tumours of all kinds, trauma, tuberculosis and syphilis in its different forms.

As regards intoxications medical literature contains scarcely any cases—a fact which makes this report of interest from that point of view. As our patient suffered from none of these affections, and as the paralysis came on after great excess in alcohol and tobacco concurrently with other phenomena of intoxication of the same nature, we concluded that the case was one of toxic peripheral neuritis of the right spinal accessory and of the ascending

branches to the palate of the left spinal accessory. The rapidity with which the symptoms cleared up is another strong argument in favour of this opinion. Considering the general condition of the patient, it is astonishing that more cranial nerves were not affected.

A careful and minute examination of the sensibility to touch and heat showed no signs of trouble, but of course it is well known that sensory fibres are more resistant of inflammation than motor fibres.

To resume, a young man, aged twenty-three, a great drinker and smoker for the past four years, suffered from occasional epileptiform attacks of toxin origin. Towards the end of the fourth year after an immoderate abuse of alcohol and tobacco the patient awoke one morning stone blind and deaf. He also showed symptoms of meningitis, dating back about three weeks. Three days later paralysis of the palate and one half of the larynx came on. Five weeks' treatment succeeded in clearing out the toxins and curing the patient. In conclusion, we wish again to call attention to the strange and complex phenomena met with in this young alcoholic smoker—the serous meningitis, the ocular and auditory lesions and the modified Avellis symptoms.

OBSERVATIONS ON THE MECHANISM OF PARACUSIS (WILLISII).

By F. P. STURM, M.CH.
(Leigh, Lancs.).

THOUGH various forms of paracusis have been described, the term should properly be confined, and is so confined in the present paper, to that condition which is characterised by the ability of a deaf person to hear better in a noise. The presence of paracusis is usually regarded as of such grave import that many otologists refuse to treat patients in whom it exists, upon the grounds that it is an indication of hopeless and incurable disease. It should rather be regarded as a proof that the special sense-organ concerned is still capable of functioning, and therefore probably amenable to correct treatment.

The writer's investigations have so thoroughly proved certain facts with regard to paracensis that the following statement is submitted as an axiom. *Paracusis Willisii, or the ability to hear better in a noise, is not in itself a pathological phenomenon, but merely a*

compensatory exaggeration of a normal physiological reflex which exists in every healthy human ear. That is to say, the healthy human ear is paracutic in a normal degree, imperceptible under ordinary conditions; the human ear in certain diseased states, notably otosclerosis, is paracutic in an abnormal and easily perceptible degree.

Normal physiological paracutis may be demonstrated by various methods, of which the following is the most simple. In a person with normal hearing a watch is held at that distance from the meatus at which it just becomes inaudible. When it is ascertained without doubt that the watch can be no longer heard, a vibrating tuning-fork of a certain pitch (C⁰ 128 V.) is applied to the vertex. As the vibrations diminish in intensity the watch will be heard quite distinctly for a few seconds, to become again inaudible as the vibrations of the fork die away. This condition of physiological paracutis, or, as it may more justly be named, induced hyperacutis, is more marked in certain individuals than in others, but it is present to a greater or less degree in all. So constant is it that I have come to the conclusion, after a very large number of experiments on normal ears, that its absence in an apparently healthy individual is an indication of some slight temporary abnormality of the auditory apparatus, just as its presence¹ in a patient who complains of deafness is an almost certain indication of otosclerosis rather than any less serious affection. Paracutis, whether of the normal or pathological variety, can be demonstrated to exist both for air-conducted sounds, as described above, and for bone-conduction in the following manner: a watch is wrapped in a sufficient thickness of lint to render it inaudible when applied to the forehead. A vibrating fork of the proper pitch and intensity

¹ The presence, that is, of slight paracutis, imperceptible to the patient, but readily demonstrated by the tuning-fork; such a paracutis would not of course be physiological. It is a curious fact of great diagnostic value that tuning-fork paracutis is present only in the normal ear and in otosclerosis, not in middle-ear catarrh or nerve-deafness. The absence of paracutis in certain cases of middle-ear catarrh, particularly in the earlier stages, requires some explanation. I believe it to depend upon strong reflex contraction of the intra-tympanic muscles, due to inflammatory irritation. Such contraction, which is probably protective in nature, may abolish paracutis by producing such alterations in the tension of the basal membrane as to inhibit the vibrations of Corti's rods. That such muscular contractions do actually take place is evident from the fact that in certain cases of middle-ear disease I have been able temporarily to restore the hearing, and to induce paracutis, by paralyzing the intra-tympanic muscles with atropine. The point is a complex one, and will be dealt with at greater length in a future communication.

when applied to the vertex causes the watch to be heard with equal intensity in either ear if the subject is normal, or according to Weber's law in such cases of deafness in which it is heard at all. If the fork is applied to the bone over one tympanic antrum, the ticking of the watch will be heard loudest (or exclusively in some cases) in the ear of that side. Paracsis by bone-conduction is therefore partially or completely ipsilateral, the sound being most readily perceived by that ear which receives the strongest vibratory stimulus.

In order to obtain a positive result, either for bone-conducted or air-conducted sounds, the footplate of the exciting fork must be actually applied to the bone; if the fork is held at the meatus no paracsis is elicited. The reason for this will be obvious when the mechanism by which paracsis is produced has been discussed. If the test is attempted with forks of unsuitable pitch the results obtained are unreliable. The writer has not succeeded in inducing definite paracsis by means of a less number of vibrations than 128 per second (double vibrations). The use of forks such as C—³ 16 V and C—² 32 V., which produced vibrations of great amplitude but almost imperceptible tone, caused no change in the acuity of hearing, either by air- or bone-conduction. Fork C—¹ 64 V., which gives a deep humming sound, has no effect in the majority of cases; occasionally it causes a diminution of hearing, probably because the effort necessary to focus the conductive apparatus for sounds of so low a pitch has the effect of damping out a sound of different pitch and small intensity, such as the ticking of a watch. Fork C⁰ 128 V., with a loud musical drone, readily induces paracsis, particularly in normal and otosclerotic ears, as does also the fork above, viz. C¹ 256 V. Higher forks than these give negative or contradictory results. It would at first sight appear that the induction of paracsis depends upon easily perceptible sounds within certain limits of pitch, but Politzer (1) has shown that paracsis, at any rate in disease, is independent of perceptible sound, and will respond to toneless vibrations of sufficient rapidity.

THE MECHANISM OF PARACISIS.

The writer who first described paracsis (Willis, 1664) attributed it to undue relaxation of the tympanic structures, but this view has never found acceptance, for it is a matter of common observation that in many instances the exactly opposite condition obtains; the tympanic membrane is tense and the ossicular joints are either stiffened or ankylosed. This led Politzer (2) to formulate

the theory which has found its way into most text-books, and has proved so generally acceptable to otologists that practically all methods of treating paracntic deafness have been founded upon it.

It will be shown, however, that the theory in question is in the face of facts as untenable as that of Willis. The teaching of Politzer is, "that this improvement of hearing during noises is due chiefly to a shaking up of the ossicles, whose joints have become rigid; these bones are thus thrown out of equilibrium, and are thereby rendered more capable of transmitting the waves of sound." In support of this assertion Politzer quotes certain experiments. He found that in some cases of obstructive deafness (two thirds of the cases investigated, to be exact) an improvement in hearing could be obtained by placing either a vibrating tuning-fork or a rapidly vibrating toneless body upon the cranial bones. These observations are correct as to facts, but the interpretation of them, namely, that the resulting paracntic is necessarily due to a shaking up of the ossicles, will not bear a moment's investigation. That paracntic is not due to such a cause is sufficiently evident from the fact of its presence, not only in cases in which the ossicular joints are abnormally lax, but also in cases in which the ossicles and membrane have been removed by operation or disease. The same objection applies to the ingenious theory recently advanced by Heath (3), who believes that paracntic is dependent upon changes in the labyrinthine tension brought about by reflex contraction of the stapedius muscle in response to sound. The existence of paracntic may be demonstrated in patients in whom the stapes is firmly ankylosed in the oval window, or fixed by adhesions between the crura and the walls of the pelvis; it others in whom the tendon of the stapedius has been divided; and even in patients who possess no stapes at all. There was recently under the writer's care a patient who underwent the radical mastoid operation about a year ago. This patient's stapes came away with the incus when the latter bone was lifted out of the attic; but she has nevertheless preserved very useful hearing, and is paracntic in the affected ear.

In consideration of such facts as the above it is impossible any longer to seek for the origin of this interesting phenomenon in the conductive apparatus, and theories of reflex muscular action, vibrations in the ossicular chain, or alterations in the auditory focus, must consequently be dismissed as fascinating reveries which fail to explain the facts. The writer does not wish to deny that the tympanic muscles by their accommodating and focussing

action do in many cases intensify in a remarkable degree an already existing paracsis, but they are only accessories to the act, and not indispensable, for it can be accomplished without them.

Löwenberg many years ago attributed the occurrence of paracsis to increased irritability of the auditory nerve; others have supposed that sonorous vibrations in some way produce a state of exalted sensibility of perception in the brain centres, without, however, explaining the manner in which this is brought about, or the mechanism which controls it. The present writer's conception of paracsis, which, for reasons presently to appear, may be called the microphone theory, affords an explanation of all the observed facts, and is based upon the following considerations.

(1) The rods of Corti, which are more or less rigid structures, must constantly receive vibrating impulses from various sources, among them the basilar membrane, to which one end of each rod is fixed, the free ends being in contact one with the other. Whether or not they receive actual impressions of sound, or merely transmit them to the nerve terminals, there to be perceived as sound, does not at the present matter; though it is improbable that they are so concerned in perception, since in various members of the animal kingdom, certainly possessed of good hearing (birds, for example), the rods of Corti are absent. The important point is that these rods are so constructed as very readily to respond to vibrations, both from the basilar membrane, to which their bases are with rare exceptions attached, and from the endolymph, into which their free ends project.

(2) The rods of Corti, though in intimate anatomical relationship with the inner and outer hair-cells in which the filaments of the auditory nerve terminate, do not themselves receive any nerve-fibres, and hence the part they play in the perception of sound must be a purely mechanical one.

(3) During the passage of an impulse along a nerve there is a diphasic variation, similar to that which occurs in contracting muscle, and capable of being demonstrated by similar methods. It is reasonably believed, upon experimental grounds, that the electrical variation of sensory nerves is an indication of the degree of stimulation; and consequently that co-existing variations are of equal intensity. Anything, therefore, which increases or decreases the amount of electrical variation in the auditory nerve will correspondingly increase or decrease the intensity of the stimulus received, which in this case is the perception of tone.

(4) The rods of Corti, fixed at one end to a vibrating membrane,

in loose contact at the other end, and situated between the two sets of nerve terminals in the inner and outer hair-cells, are especially fitted to produce such electrical variation, for each pair of rods is structurally a delicate microphone, capable of producing changes in the electric current by the action of sonorous vibrations. Such a condition of loose contact is extremely sensitive, as in the case of the ordinary telephonic microphone. A very small vibration produces a variation in the resistance at the point of contact, and a very large increase in the intensity of the sound transmitted.

This conception of the function of the rods of Corti, or rather, one of the functions which they subserve, explains the occurrence of paracusis in individuals in whom only the perceptive apparatus remains. Another interesting point, which affords further indirect proof of the probable correctness of the writer's theory, is as follows: Helmholtz (4) has shown that bodies of small mass which are readily set in motion even by vibrations of a different periodic time than their own natural tone quickly cease to vibrate when the exciting cause is removed. Such are the rods of Corti, and it is probably to this property of readily responding to vibrations, and rapidly ceasing to vibrate, that we owe the explanation of a clinical phenomenon which is a matter of daily observation. Reference is made to the very temporary improvement of hearing produced in far advanced cases of otosclerosis by inflation of the tympanum—an improvement usually measured by seconds. Such cannot be due to ventilation of the middle-ear cleft, for the Eustachian tube in these cases is already abnormally patent, the stapes ankylosed in its fenestra, and the round window probably occluded by a process of hyperostosis; but it is quite conceivable that the forcible impact of air against the outer wall of the internal ear sets the rods of Corti in motion, thus producing a condition of paracusis which lasts only so long as they continue to vibrate.

The writer does not wish to assert that this is the exclusive or even the chief function of these structures. It is not to be supposed that such intricately planned organs exist merely to enable deaf people to hear better in a noise, but that they do so act is not an unreasonable theory in view of their anatomical structure and relationships, which obviously fit them for the performance of such a function. Reference has already been made to the absence of the rods of Corti in birds; a further indication that they are probably not essential to the sense of hearing is furnished by the observations of Ter Kuile and Hardesty (5),

who describe the inner pillar of Corti as resting upon the labium tympanicum in the basal coil of the pig's cochlea.

A possible objection to this theory of paracsis, and one which has indeed already been submitted to the writer by an otologist whose opinion is worthy of the greatest consideration, is the present lack of clinical or experimental evidence that the rods of Corti do actually by their vibrations influence the auditory nerve-endings. My answer to this is, that there is plenty of evidence of another kind, for these structures are so arranged as to render it mechanically impossible for the nerve-terminals to be uninfluenced by the vibrations of the rods. There is even a special arrangement to ensure the direct transmission of such vibrations. The phalangeal processes of the outer rods give origin to the membrana reticulata, a structure which forms a covering for the whole of the outer hair-cells, and through the perforations of which the sensory hairs project. Every vibration of the rods of Corti, however delicate, is thus immediately perceived by the hair-cells, being transmitted to the single row of inner cells by direct contact, and to the several rows of outer cells chiefly through the agency of the reticulate membrane. It is thus possible to dispose of the above objection upon merely anatomical grounds. Moreover, it is possible to enunciate this conception of paracsis in such a manner as to leave the exact function of Corti's rods an open question, as of course it is, and yet to sacrifice no essential portion of the theory. What is of primary importance is the assumption that the positive variation associated with certain auditory stimuli (the hum of a vibrating fork or the roar of a train) induces a condition of such hyper-sensitiveness in the nerve as to favour the transmission of feebler sounds which would not otherwise be able to produce any impression. The belief that the rods of Corti are the particular means by which such a positive variation is induced is based upon considerations which have already been discussed.

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SOCIETIES' PROCEEDINGS.

ROYAL SOCIETY OF MEDICINE.—OTOLOGICAL SECTION.

June 8, 1912.¹

DR. W. MILLIGAN, *President of the Section, in the Chair.*

Abridged Report.

Radiography in the Detection of Mastoid Disease.—A. E. Barclay, M.D., and W. Milligan, M.D.—It was with the object of determining the value of an X-ray examination in the doubtful rather than in the straightforward cases that this investigation was undertaken. There is a tendency to rely too much on X-ray evidence, and to take the dictum of the radiographic evidence as the last word in diagnosis. This is by no means an unmixed blessing, for it leads to slovenly clinical work and a dependence on technical aid which is available only in the larger hospitals. Even if radiography should turn out to be of great assistance in the diagnosis of these difficult cases we would, at the outset, emphasise the necessity of a detailed clinical investigation before resorting to radiography. Should radiography eventually achieve a complete triumph—which does not seem at all likely—radiography might be the last word, but it should not be the first and only means of investigation. The theory of the examinations is simple. Two radiographs of the head are taken, one from each side, the essential point being that the head should be firmly fixed in precisely the same relative position for the same plates so that an exact comparison may be made when the negatives are developed. We have tried a variety of positions in order to show the mastoid cells more clearly, and find that the best results are obtained with the X-ray tube centred an inch above the external auditory meatus. Some form of viewing-box which enables an examination of both plates at the same time is necessary: and it goes without saying that the person who examines the plates should do it with an open mind, preferably not knowing on which side the disease is suspected, for in many of the cases the changes seen are quite slight, and any preconceived ideas are a hindrance rather than a gain. No attempt should be made to form an opinion until after the plates are dried, as a wet negative reveals less detail than the dried plate. Any air space within the bone allows the X-rays to pass through more easily than through the bone itself, hence the air spaces in the mastoid process should show up as comparatively dark areas on the negative, while any filling up of the cells with pus will lead to their obliteration. The presence of a thickened mucous membrane will decrease the translucency without actually obliterating the outline, with the result that although the presence of the air-cells can be detected they are indefinite in outline and very hazy. The method of examination is simple in theory but in practice there are many difficulties. In the first place, only the most perfect plates are of any value, and to obtain a pair of the most perfect plates is not easy in this region. Moreover, the patient's head

¹ Extra-Metropolitan Meeting held at the Royal Infirmary, Manchester.

must be held absolutely still during the exposure, and this is often next to impossible.

The mastoid cells seem to bear a certain resemblance on the two sides. If, therefore, we have plates of the two sides for comparison we should be able to form an opinion as to the translucency of the cells. In children the cells occupy a much larger proportion of the mastoid process than in adults, also the actual radiography is an easier task, although it is more difficult to maintain fixation of the head, so that it should be easier in young subjects to form an opinion.

Another source of error in diagnosis arises from the fact that the presence of old-standing disease tends not only to thickening of the mucous membrane but also to sclerosis of the mastoid trabeculae, a sclerosis which we have noted in some cases to exist from base to apex.

To commence an investigation with a preconceived idea based on isolated cases is unwise, and we have simply set aside all our material for this communication and have not attempted to draw any conclusions until we came to the compilation of this paper. The X-ray negatives were then carefully examined without reference to the notes and the reports were drawn up in entire ignorance of the condition found at the operation.

We will now briefly review some of the cases.

A series of eleven cases was narrated, in every one of which, with one exception, we found changes in the mastoid process whenever there was suppuration present in the cells. The exception proved to have been an error in technique, consequently we have little hesitation in saying that where radiographs show the mastoid cells equally clearly on the two sides there is no suppuration present within the cells, and this is information of great value if it can be obtained. We say "if" advisedly, for several reasons. The first of these is the technical difficulty of the radiographer in producing exactly similar plates; the X-ray tube is a very fickle instrument, and any alteration of the vacuum within the tube will produce an alteration in the penetrative quality of the rays, resulting in a difference in the negatives of the two sides even though all the other factors have remained constant. Again, if there is an abscess over the mastoid the shadow of the cell outlines will be rendered less distinct, and this must be taken into account in reading the negatives. The degree of haziness due to this cause will vary according to the quantity of pus and also with the penetrative qualities of the X-ray tube where the plate was taken. Then there is the difficulty of immobilising the head, especially in radiographing the affected side, and when the patient moves another plate has to be taken. The difficulty of reproducing the exact conditions of the first plates is so great that we now think it advisable to take plates of both sides again.

We now turn to the indefinite cases in which the cells are discernible, but hazy. This condition is, as expected, usually associated with thickening of the mucous membrane without the presence of actual pus, but we must again insist on the importance of examining two exactly similar plates. Haziness on both sides may be met with, and in this case we would draw no inference either for or against the presence of pus within the cells. It is in these cases that the most careful comparison of the two sides, and an estimate of the variations due to the technique, are most essential.

In those cases in which no mastoid cells are seen this is due to one of two causes: either the air-spaces are obliterated or the radiographs have been taken with a tube of insufficient penetrating power, a fault which

an expert radiologist should be able to tell from the general character of the plate by comparing the relative densities of the shadows of the other bones with that cast by the mastoid. It is a matter of experience in the interpretation of radiographs and cannot be readily described. In mastoid cases we must use rays that are sufficiently penetrating to pass through all the dense structures, and if we can tell from the shadows of the other bones of the skeleton, such as the tibia, etc., that the character of the rays is such that the mastoid should throw a shadow of a certain density, and yet the rays have almost entirely failed to penetrate this bone, we are justified in saying that there is a sclerosis of the mastoid process—not a sclerosis of the cortex, but a general sclerosis that extends throughout the substance of the bone. This observation may be of importance in indicating the direction in which the spread of infection is likely to occur—*e. g.* towards the labyrinth rather than towards the mastoid. Both apart from, and in conjunction with, the sclerosis we see obliteration of the mastoid cells, and this we believe to be always of pathological significance, but it does not invariably indicate the presence of pus, for old-standing mastoid disease seems to give the same radiographic results in a certain number of cases.

We believe that the method of investigation is likely to prove of great assistance in excluding the presence of pus within the mastoid cells, especially in recent cases, but of less certain value in detecting its presence.

The PRESIDENT (Dr. W. MILLIGAN) said that another point of value was the disputed question of sclerosis of the pars mastoidea: what it was, or in fact whether it existed. There was the further point as to whether a mastoid which was dense had anything to do with the production of labyrinth fistulae in the external canal, which certainly were very common.

Mr. A. CHEATLE desired to say broadly that the value of radiography in the future would consist not so much in the detection of disease as in the determination of the type of bone present and in the amount of cell distribution. It was unnecessary for him to describe on the present occasion what he called the diploëtic infantile type of bone, and the influence of that type in producing chronic suppuration, but it had a distinct bearing on the subject under discussion. For instance, if the acute middle-ear discharge which occurs in scarlet fever, measles, and other acute infectious diseases did not clear up in a reasonable time and the diploëtic type was determined by radiography, then it would mean that the antrum should be opened through its dense outer wall in order to save the patient from chronic discharge and its complications. He would not enter into the subject of chronic suppuration, but there was no doubt that this type was responsible in a large measure for chronic suppuration, and indirectly for labyrinth infection. One anatomical point which had not been worked at, as far as he knew, was the symmetry of the bone in health. He would be reading a paper on the subject at the International Otological Congress in Boston. He had examined both bones in 120 persons, and found that 82 were symmetrical and 38 asymmetrical; in many the asymmetry was slight, but in some it was very gross. He found that the diploëtic type with a dense outer antral wall was present in normal bones in 24 on both sides and in 20 on one side only out of the 120. A recital of those figures would explain some of the anomalous results which Dr. Barclay and Dr. Milligan had obtained by means of radiography. One could never depend on the radiograph alone for showing whether disease existed or not, on account

of normal asymmetry. With regard to osteo-sclerosis, he did not think it did not occur, but it was only very local and easily distinguished from the normal dense bone.

Mr. SYDNEY SCOTT asked Dr. Milligan and Dr. Barclay what their experience had been of stereoscopic radiography. Personally, he discarded flat radiograms some years ago because he was not convinced that they revealed more assistance than that obtained by other methods of clinical examination, but he had found that the introduction of the third dimensional view could be obtained by stereoscopic radiography. He had employed this form of radiography repeatedly during the last two years, and now had satisfied himself that stereoscopic radiograms were of great practical value.

Dr. LOGAN TURNER said that if, when taking the radiograms, the patient's auricle was held forward, a better view would be obtained of the mastoid region. In some of the radiograms shown that morning the auricle made a shadow which rendered the details less clear. We had to study this subject from the anatomical as well as from the clinical side, and he could not agree that radiography would be found of no value clinically. The question of mastoid symmetry was one of great importance. Beck, of Chicago, had stated that after radiographing over 300 heads he had found the two mastoid regions symmetrical with one exception. The whole secret of its value depended on whether symmetry existed or not. In the anatomy of the face, it was true that great asymmetry was the rule, and therefore it would be strange if there were a different state of things in the mastoid bones. That, however, was a matter that must be decided. He contended that one did find the radiograph of value in disease. As an illustration he brought for inspection photographs which were taken by Dr. Porter. One was that of a boy who had had acute middle-ear suppuration. Paracentesis had been done and the patient was not seen again for five or six months. He then returned complaining of pain over the mastoid region. A photograph of both sides was taken, but as they were not good they were discarded and the boy was kept under observation. His temperature rose at night, and there was tenderness on pressure over the mastoid. He developed oedema over the mastoid and had a leucocytosis of 14,600. A second radiogram was taken the day before the operation, but it was, unfortunately, not developed until after the operation. The surgeon opened the mastoid because of the tenderness, the temperature, the oedema, and the leucocytosis. The mastoid was perfectly healthy, and it would be agreed on examining the radiograms that there were healthy-looking cells on the two sides. He put the question whether, if the negative had been developed before the operation, the surgeon would have had the courage to hold his hand, or whether he would have gone on with the operation? Again, there were doubtful cases of what might be termed latent mastoiditis, where there had never been perforation, or if there had been, the tympanic evidence of disease had passed off, and there was normal hearing, no inflammation of the drumhead, but mastoid tenderness and pain. Might not cases of this kind be assisted by the use of the radiogram? He contended that it did help us clinically. Leidler had written a paper on the value of the radiogram in the detection of malignant disease of the ear. Two cases were reported in which the author showed by radiogram that in one of them the malignant disease had spread from the mastoid region to the posterior fossa and into the middle fossa of the skull, and on that evidence he determined it would not be advisable to operate. Use might also be found for radiography in cases of congenital

malformation, where we could tell whether we were dealing with a labyrinth, whether the labyrinth was absent, or whether the malformation was limited to the tympanic portion, or involved both the tympanic and the labyrinthine portions of the ear. (Dr. Logan Turner exhibited radiograms.)

Dr. H. J. DAVIS said that one could get a rapid idea of the type of bone present by means of a small transilluminating electric lamp, such as he saw being used in Berlin. The lamp was put inside the meatus, and gave a very brilliant light, and illuminated the mastoid region. If the bone was dense, shadows were more opaque than if the bone was cancellous. In a case of mastoiditis the difference on the two sides was very marked. The lamp was in the nature of a minute Heryng's transilluminator, and the principles of illumination were the same.

Dr. BARCLAY, in reply, said the stereoscopic method was excellent, but he regretted to say he personally had very poor stereoscopic vision, so he could not appreciate such pictures. But there was a difficulty in producing stereoscopic pictures; it was even difficult to get a single plate of a mastoid when it was diseased, as the patients were generally so dull and stupid that they would not keep still. With regard to holding the auricle forward for the purposes of the radiograph, he had tried it in one case but was not satisfied with it, because the auricle being held forward increased the distance between the plate and the head; moreover, the holding of the auricle seemed to encourage movement on the part of the patient. Moreover, the shadow cast by the auricle was easily recognised. The electric lamp in the ear seemed to be a simpler method of investigation, except that it did not show the cells themselves.

Dr. MILLIGAN, in reply, considered that this method of examination was yet only in its infancy. It was difficult to draw any very precise deductions from what had been done so far, but he looked forward to its being of ever-increasing value in the diagnosis of doubtful cases. There were cases in which it was a delicate point to say whether an operation should or should not be done. That applied more to private than to hospital patients, for in the latter the patients were under one's daily observation and control, and exploratory operation could be carried out without misgiving. But there was a class of private patient in whom it was very desirable to fortify the clinical diagnosis, so far as that could be done, before making use of the knife. If radiography could give any reliable indications in those cases it would be of great value, especially in the early detection of tubercle of the bone. In children one could at times see a deposit on the plate at a spot where it turned out there was tubercle deep in the petrous portion. Dr. Logan Turner referred to the value of radiography in the detection of early malignant disease. There was another class of case. One of the radiograms exhibited that morning, that of a child, showed how beautifully the labyrinth was seen. In practice one was faced with the difficulty of giving advice in certain cases of severe deafness in children, in atresia of the meatus, and in congenital malformation, as to whether anything should be done or not. In that class of case one could see whether there was a labyrinth or not. He did not for a moment deny the infantile type of temporal bone, but it had been doubted whether there was a sclerosis of the mastoid cells themselves. Dr. Barclay and he considered as a result of inspection of the radiograms and in the light of the operative findings, that there was such a condition as sclerosis of the mastoid bone. They did not attempt to

definitely rely on the X-ray examination, but, as Dr. Barclay wisely pointed out, they exhausted every possible means of diagnosis first, and then, if there was even a slight element of doubt, X rays were used.

Demonstration of a Method of Studying Degeneration in Nerve-fibres by means of the Hot Stage.—J. Lorrain Smith, M.D., and W. Mair, M.D.

The Cerebro-spinal Fluid as an Aid to Diagnosis in Suppurative Meningitis of Otitic Origin.—F. G. Wrigley, M.B.—The disease often does not follow the typical course described in the text-books, many symptoms which are there regarded as essential being absent. The reason why accurate diagnosis of meningitis is often so difficult to make is due to the fact that many of the symptoms are those of other complications of otitis media—*e. g.* vomiting and optic neuritis are common in brain abscesses, high temperature and rapid pulse in lateral sinus thrombosis. Head-retraction frequently occurs in cerebellar abscess; moreover, all the symptoms of suppurative meningitis, though less intense in character, may occur in the condition known as serous meningitis. The importance of an accurate diagnosis is at present chiefly regarded from a prognostic standpoint, for if the suppurative condition can be excluded the prognosis is of course much better.

The Condition in Suppurative Meningitis.—In most cases of suppurative meningitis the tension is raised, the fluid often issuing as a continuous stream, and may even spurt to some distance away from the needle. In some cases, however, the tension is lowered; this is uncommon, but does occur when a thick basal exudate prevents free communication between the subarachnoid space at the base of the brain with that of the spinal cord.

Appearance: This is often taken as the index of the presence or absence of suppurative meningitis—if the fluid is clear meningitis is said to be absent, if turbid, then present. This is true in the majority of cases, but I have met with three cases which seem to show that this is not always an infallible test.

In two cases of brain abscess in which the cerebro-spinal fluid was quite turbid there was increased albumen (0.18 per cent. Esbach in one case and 0.2 per cent. Esbach in the other), the tension was markedly raised, and a marked polymorphonuclear leucocytosis was present in films made from the fluid. One was a temporo-sphenoidal abscess, which was drained by operation: the case ended fatally, and at the *post-mortem* there was a large abscess cavity, the rest of the temporal lobe being infiltrated with pus and somewhat resembling a cellulitis. There was a slight injection of the basal meninges but no definite meningitis. The other case was a cerebellar abscess: a radical mastoid operation had been done ten days before; meningitis was diagnosed and a decompression operation decided upon. A trephine opening was made over the cerebellum as a start, but, as the brain was not pulsating, the cerebellum was explored and an abscess containing $\frac{1}{2}$ oz. of pus was found and drained. Nothing further was done and the patient made a complete recovery. In each of these cases the condition of the cerebro-spinal fluid was the same, the important point being that no bacteria were found in either case either in microscopic films or in cultures, eight punctures being made in the first case and three in the second. Another point of resemblance is that each was apparently an acute form of abscess; in the fatal one there was no sign of the formation of a capsule round the

abscess, and in the second case no capsule was at the time noticed round the abscess and no resistance was felt when the substance of the cerebellum was explored. From these two cases it would appear that a turbid cerebro-spinal fluid is not of itself sufficient evidence for the diagnosis of suppurative meningitis.

The third case was a temporo-sphenoidal abscess. The cerebro-spinal fluid was under high tension and quite clear in appearance. On standing for an hour or so a well-marked coagulum was deposited, histological examination of which revealed a large number of polynuclear leucocytes and numerous clumps of staphylococci. The patient died, and *post-mortem* there was a well-marked basal meningitis. A lumbar puncture done the day before death gave similar results to the first one. This case seems to show that suppurative meningitis may be present with a clear cerebro-spinal fluid which may contain bacteria, and that a clear cerebro-spinal fluid is not sufficient by itself to exclude suppurative meningitis.

If the nature of the fluid suggests suppurative meningitis and bacteria are not found by the microscope, then, before making an absolute diagnosis, cultures should be made. In practice this, of course, would be difficult, as cases are often too urgent for time to be lost in having the cultures prepared. In these cases I would suggest that if bacteria are not found in the cerebro-spinal fluid by the microscope and any operation is undertaken, it should include exploration of the cerebellum and temporo-sphenoidal lobe. Even if meningitis is present little or no harm would be done, and it might be the means of bringing to light an abscess of which no definite symptoms were present.

Another feature which may be of use is the estimation of the amount of glucose present. It has been stated that the amount of glucose present in the cerebro-spinal fluid diminishes in meningitis, disappearing as the disease progresses. I have estimated the sugar in eleven cases (twelve punctures) and found it normal in eight specimens. In the other four the results were: Case 1: First puncture, 0.14 per cent.; second puncture, 0.08 per cent. Case 2: There was no reduction with Fehling's solution. Case 3: No reduction with Fehling's solution. Thus the amount of sugar may diminish in suppurative meningitis, and although it may not be of the first importance, the absence or diminution of the amount might be taken into account as an additional confirmation of the existence of meningitis. Albumen is increased in suppurative meningitis: this is easily seen on boiling a tube, when the faint haze of the normal fluid is replaced by definite opacity. In all cases in which I have estimated the amount of albumen it has been 0.1 per cent. or above.

Histology: There is generally an increased leucocytosis in the cerebro-spinal fluid in meningitis. Two leucocytes to a field is said to be the normal. The leucocytosis chiefly affects the polynuclear leucocytes, though the lymphocytes are also increased.

Bacteriology: The organisms most commonly found in the cerebro-spinal fluid are the same as those found in the ear: A Gram-negative diplococcus (? *Diplococcus zotarrhalis*), streptococci, staphylococci; also found, though more rarely, are *Bacillus coli communis*, *Bacillus proteus vulgaris*, Friedländer's bacillus.

The diagnosis of suppurative meningitis cannot be made with certainty (though it may exist) without the presence of bacteria in the cerebro-spinal fluid, and I consider that the following features are usually necessary before an absolute diagnosis can be made: The fluid is either turbid or deposits a coagulum quickly on standing. The albumen is increased 0.1 per cent. Esbach or above. Microscopic examination

shows a polymorphonuclear leucocytosis, and bacteria are found either in films or cultures. If these features are present the diagnosis may be made with certainty.

Mr. C. A. BALLANCE said that the only definite evidence that meningitis was present was the discovery of the causal organism in cerebro-spinal fluid. With regard to treatment, he was very much interested, when in Copenhagen last autumn, in seeing Dr. Mygind's cases. Dr. Mygind had written papers on the treatment of meningitis, and he had a number of cases brought up for his inspection. They were almost all aural cases, and Dr. Mygind considered that the cases of meningitis which came on after operation on the temporal bone were almost always fatal. Some of the cases in which the onset antedated the operation could be saved. The operations which Dr. Mygind looked upon as most important were, first the removal of the source of infection: that all would agree with. Dr. Mygind had also planned a definite operation in the shape of a decompression—*i. e.* he removed the bone over a definite area, $1\frac{1}{2}$ to 2 sq. in. in the region of the original site of infection—and he sometimes opened the dura. He (Mr. Ballance) was surprised to find that in some cases which recovered the dura had not been opened, but there had been only removal of a portion of the bone, which he did not regard as a decompression operation at all. That term should include incision of the dura. In all the cases which Dr. Mygind had treated he did not recognise the presence of meningitis unless there was turbid cerebro-spinal fluid and he could grow an organism from it. That was a most important and valuable point, because it limited one to definite evidence of pyogenic inflammation of the meninges. Otherwise one might be reporting cases as meningitis which were not so, and some wonderful operation might be carried out on them and cure attributed to it which might have occurred in any case. With regard to the operations which he (Mr. Ballance) did, he had made large craniectomies in the occipital region and endeavoured to drain the large cisternæ at the base of the brain, but he had been struck by the fact that the more complete apparently the operation was the more likely was the patient to die. For that reason he was much interested in the decompression operations which Dr. Mygind did, for he, in all cases, combined decompression with lumbar puncture; and what one had generally to do in cases of general meningitis—he did not include the fulminating cases which killed the patient in thirty-six or forty-eight hours, but those which lasted a week and which in future could perhaps be arrested—was, first of all removal of the primary disease, which was absolutely essential, and subsequently a small local craniectomy with incision of the dura, but always lumbar puncture repeated day by day. He thought it absolutely essential, so as to arrest the meningitis, that one should get rid of the intra-dural pressure. If one did so, for some reason certain pathogenic micro-organisms were not able to grow as they grew under conditions of pressure. And if that pressure were relieved, as Mygind had done in some of his cases, or if one did lumbar puncture, or combined these methods, then in a certain proportion of these cases one would be able to arrest the progress of what was believed to be general meningitis. In addition it was of the first importance to use a vaccine as soon as possible. An autogenous vaccine required some time for its manufacture, but when the particular micro-organism was known one could use a stock vaccine or a stock antitoxic serum.

Dr. THOMAS BARR said that an important point in regard to this subject was the distinction between serous meningitis and purulent meningitis. It was generally held that if polymorphonuclear cells and

pathogenic organisms are found in the cerebro-spinal fluid derived from lumbar puncture the case is necessarily one of purulent meningitis. But some time ago he saw a case which showed the incorrectness of that view. The case was that of a young man who presented typical symptoms of meningitis in connection with otorrhea of four years' duration. The radical mastoid operation was performed, and the lateral sinus was exposed and granulation-tissue with purulent matter were found on its outer surface. After a few days, during which the meningeal symptoms continued with extraordinarily severe pain in the head, a remarkable bulging was observed in the neighbourhood of the sinus. At first it was thought that the sinus had become the seat of a thrombus, but the swelling was large and elastic, and it was decided that it was due to a bulging of the dura mater by fluid underneath. Lumbar puncture was done, and fluid escaped under very considerable pressure. The immediate result was the disappearance of the headache, which did not return, while the bulging referred to quickly diminished and in a short time disappeared. The pathologist's report was to the effect that the fluid was slightly turbid, that it contained abundant polymorphonuclear cells and a Gram-negative diplococcus. This report pointed apparently to purulent meningitis. The young man is now perfectly well.

Dr. A. BRONNER remarked that in cerebral tumour with increased pressure, when lumbar puncture was done and there was little or no fluid, this was said to be due to occlusion of the foramen magnum from pressure. If it were due to inflammation one would often find similar conditions in meningitis.

Mr. WEST said that in a recent discussion on brain abscess he drew attention to the fact that in cerebellar abscess it was characteristic to get not only many other symptoms of meningitis, such as head-retraction, but to get cloudy cerebro-spinal fluid. The fluid was very rich in polymorphonuclear leucocytes, but was sterile. With regard to the treatment of meningitis, it was always possible to prevent pressure being the cause of death in meningitis; and without a decompression operation—*i.e.* with only lumbar puncture. Lumbar drainage by retention of the cannula, or trans-labyrinthine drainage through the meatus, would give the same result, and perhaps even more efficiently. But his experience was that although one could in this way deal with many of the most distressing symptoms of meningitis, most of those cases would die. He had seen only three cases recover from proved meningitis. Death occurred from the steady progress of the infection in the meninges. So finally one would find a patient whose meningeal surface was almost dry, and yet there was a thick layer of inflammatory material spread all over the base, and creeping up along the fissure of Sylvius, and that patient died of general sepsis or of disintegration of brain from local sepsis. His experience of vaccines in these cases had been disappointing. He asked whether members present had investigated the question in the way of trying "sensitised" vaccines. He understood that they could be given in almost unlimited quantity, and without producing what was known as the negative phase. In that way we might get a step further in the treatment of meningitis.

Mr. CHARLES G. LEE said he understood it had been stated that repeated drainage would result in lowered pressure. He wondered whether the Section was acquainted with the work of Dr. Alexander on epilepsy. Dr. Alexander, with the idea of permanently reducing pressure and stopping the fits, had been removing the parietal bone, then cutting strips of the dura out, leaving strips intact. He claimed to have brought

about in this way what he desired. Possibly this course would be better than the repeated lumbar puncture which had been advocated at this meeting, and which Mr. Lee believed was not always unattended with serious consequences.

Mr. SYDNEY SCOTT said the question now arose as to what constituted meningitis. Personally, he only accepted meningitis for the diagnosis when the cerebro-spinal fluid contained bacteria. A second question had arisen—what class of case had a chance of recovery? He related the case of a patient whom he had been called to see on account of violent headache following hæmorrhagic otitis media (unilateral). The hæmorrhage had been quite slight, but a small clot still obscured the landmarks of the tympanic membrane. The deafness was not great, the whisper and watch being audible on the affected side. The fork was lateralised from the forehead to the same side. The headache was the chief symptom. He found the patient had vomited six times during the morning. He described the pain as resembling that of a tight band around the head. The pupils were fixed, and the tendon reflexes were abolished. There was a marked white *tâche cerebrale*. He was afraid lest this patient was already doomed; however, he operated almost at once, that is, in about three hours, and, contrary to his expectation, found that the whole of the mastoid process was of the pneumatic (coarsely cellular) variety, and that the cells were absolutely normal air-containing cells without any sign of inflammation. Nevertheless, the antrum, which was exposed on account of the tympanic appearances, was found to contain blood-stained fluid, which was found to be swarming with pyogenic streptococci. The dura mater was exposed and was obviously hyperæmic: it was not incised or punctured. The antrum was drained by tube, and the incision closed around it by suture in the usual method of performing Schwartze's operation. The lumbar puncture yielded cloudy cerebro-spinal fluid, which escaped under pressure. The albuminous content was increased, polymorphous nuclear cells were abundant, and streptococci were discovered in films and grew in long chains on culture, conforming to *pyogenes* in the sugar tests. The result of the operation was an arrest of the symptoms. A second puncture two days later yielded normal cerebro-spinal fluid under normal tension, free from excess of cells and of bacteria. The patient gradually improved after passing through a critical stage of wild delirium, and he left the nursing home in the third week with the wound healed and apparently quite recovered. A second case of meningitis which recovered was admitted with sixth nerve palsy, and pneumococci were present in the mastoid pus and in the cerebro-spinal fluid withdrawn by lumbar puncture. The simple mastoid operation, lumbar puncture and the introduction of salines were the only measures adopted. Had vaccines or anti-sera been used in the above cases the recovery would probably have been attributed to these agents, but the omission to employ these remedies in these instances serves as evidence that there is a class of meningitis which resolves without any very clear explanation of the reason.

The PRESIDENT (Dr. W. MILLIGAN) said that they never regarded a case as one of purulent meningitis unless bacteria could be found under the microscope or cultivated on films. Cases in which no bacteria could be found were classified as serous meningitis, however turbid the cerebro-spinal fluid might be. A fair number of decompression operations had been done in his department, and not only was a piece of bone cut away, but a portion of the dura also. Two cases of cured purulent meningitis of the posterior fossa had been shown that morning in which

bacteria were found in the cerebro-spinal fluid. In one the organism was the *Diplococcus catarrhalis*, in the other the streptococcus. Recovery occurred in both.

Mr. WRIGLEY, in reply, said that with regard to the question of not getting cerebro-spinal fluid in brain tumour, he had seen one case of meningitis in which he got 2 drms. of pus and nothing further; *post-mortem* the brain was found to be very oedematous, and there was a thick exudate over the basal meninges. In three other cases of septic meningitis he got no cerebro-spinal fluid at all.

Demonstration of Cases.—W. Milligan, M.D.—(1) Mrs. C——, chronic right-sided suppurative otitis media of many years' duration; constant pain over right side of head; mental hebetude. Operation in June, 1897: Abscess in temporo-sphenoidal lobe, containing 3 ounces of pus, opened. Drainage with rubber tube; mixed infection, streptococci and staphylococci being much in evidence.

(2) H. W——, large temporo-sphenoidal abscess, the result of chronic suppurative middle-ear disease, containing 2 oz. of pus, evacuated in 1905. Mixed infection, but mainly streptococcal.

(3) H. P——, male, aged thirty-six. Right chronic suppurative otitis media of two years' duration: temporo-sphenoidal abscess. Symptoms: Headache, vomiting, constipation; temperature 102° F., pulse 90 (later, temperature 98° F., pulse 44); no nystagmus, ptosis, or optic neuritis. Cerebro-spinal fluid rather cloudy; tension increased; increased albumen and leucocytes, no bacteria. After two days well-marked ptosis was noticed. Operation (April 28, 1910): Post-aural operation: cholesteatoma, large temporo-sphenoidal abscess containing 2 oz. of pus and shreds of brain tissue, counter-drain directly over the lobe. Slight brain hernia developed: reduced by pressure.

(4) A. D——, male, aged twenty-four. Right chronic suppurative otitis media of eighteen years' duration: cerebellar abscess. Symptoms: Vomiting, vertigo, occipital headache, constipation; mental condition drowsy; temperature 97° F., pulse 56. Spontaneous nystagmus towards lesion. Well-marked optic neuritis (right and left); facial paralysis (right). Cerebro-spinal fluid clear; tension increased; slight increase of albumen; no bacteria. Operation (February 20, 1910): Post-aural operation, fistula into antrum: extensive cholesteatoma. The cerebellum was explored in front of the lateral sinus, and an abscess containing about 2 oz. of pus was found. Blood count: Leucocytosis, 14,000. The radical mastoid operation was completed a month later.

(5) E. S——, aged sixteen. Suppurative otitis media of many years' duration. Admitted complaining of occipital headache, sickness and vertigo. Pulse 54, temperature 96.4° F., respirations 14. Radical mastoid: opening of cerebellum through posterior wall of mastoid; 1½ oz. of pus evacuated; drainage by rubber tube. Return of headache. Decompression operation (posterior fossa): Removal of pus from subdural space; complete recovery.

(6) L. G——, female, aged twenty-one. Chronic right suppurative otitis media of many years' duration; middle ear disorganised and full of granulation-tissue. Symptoms: Vomiting, vertigo, occipital pain, mental hebetude, staggering gait. Operation: Post-aural operation followed by opening up of cerebellar abscess through posterior mastoid wall; 2 oz. of pus evacuated; drainage by means of rubber tube.

(7) M. J——, male, aged thirty. Chronic suppurative otitis media (left) since infancy: extra-dural abscess (middle fossa); serous menin-

gitis. Symptoms: Headache, vomiting; temperature 100° F. Hearing: Watch not heard at all; tuning-forks lateralised to right ear. Caloric tests negative. Optic neuritis left disc. Cerebro-spinal fluid: Clear, under high tension; no bacteria. Operation (June 23, 1911): Post-aural operation; cholesteatoma; extra-dural abscess over middle fossa, sinus running into temporo-sphenoidal lobe, but no abscess in brain. Radical operation completed fourteen days later.

(8) H. W——, female, aged thirty-eight. Chronic suppurative otitis media (right); serous meningitis. Symptoms: Temperature 100.2° F.: slight head-retraction; headache; several attacks of vomiting; congestion of right optic disc. Cerebro-spinal fluid: Clear, under high tension; no bacteria. Operation (April 29, 1911): Small cholesteatoma; roof of middle ear carious; temporo-sphenoidal lobe bulged down into wound but no abscess found. A large amount of cerebrospinal fluid drained away from the cisterna pontis; this continued for several days after operation. Symptoms disappeared a week after operation.

(9) F. S——, female, aged nineteen. Right suppurative otitis media of ten years' duration; ? serous meningitis. Symptoms: Occipital headache, vomiting, vertigo, slight mental apathy; temperature 100° F. Complete prolapse of upper and posterior wall, ear discharging freely. Hearing: Watch not heard at all; tuning-fork lateralised to the right ear. Caloric tests normal; doubtful fistula nystagmus. Eyes: No spontaneous nystagmus; paralysis of right external rectus; optic neuritis right > left. Cerebro-spinal fluid: Slightly turbid; excess of lymphocytes. Operation (April, 1911): Post-aural operation; very extensive cholesteatoma; no dura exposed, and no sign of labyrinthine fistula.

(10) P. B——, for five years suffered from constant vertigo and incessant tinnitus, quite unable to work; under medicinal treatment for five years. Operation: Extirpation of vestibulo-canalicular system; complete relief from vertiginous symptoms.

(11) L. J——, female, aged nineteen. Otitis media suppurativa of many years' duration: before admission frequent attacks of vertigo and vomiting; meatus full of granulation-tissue, bare bone felt with probe. Watch heard on contact. Caloric tests positive, both hot and cold, syringing bringing on nystagmus in fifteen to twenty seconds. "Fistelsymptom" well marked on compression with air-douche, also on pressing tragus inwards; marked Rombergism; no optic neuritis. Operation: Complete post-aural operation; large fistula found in external canal.

(12) J. F——, male, aged seventeen. Chronic suppurative otitis media (left) of fifteen years' duration; fistula into external canal. Symptoms: Temperature 99.8° F., vertigo, vomiting, pain in left ear. Hearing: Watch not heard at all; tuning-forks lateralised to left ear. Nystagmus: Spontaneous nystagmus towards right side; caloric tests indefinite, no fistula nystagmus; marked Rombergism. Operation (September 21, 1911): Post-aural operation; fistula in bony portion of external canal.

(13) A. L——, male, aged thirty-five. Chronic suppurative otitis media (right) of ten years' duration. Symptoms: Dizziness on syringing ear. Hearing: Watch heard 1 in. from ear; tuning-forks lateralised to right ear. Nystagmus: Slight spontaneous nystagmus to both sides. Caloric reaction: Positive result obtained in ten seconds; fistula nystagmus well marked; fairly well-marked Rombergism. Operation (April 27, 1911): Post-aural operation; small cholesteatoma; large fistula on posterior limb of external canal.

(14) L. B——, aged twenty-six. Right-sided suppurative otitis

media of twelve months' duration; severe vertigo. Caloric reaction: Nystagmus to opposite side in seven seconds. Radical mastoid operation: Stapes absent; pus from vestibule; opening up and drainage of vestibule. Subsequent treatment by packing. Blood count:

	Before operation.	Two days after.	Five days after.	Nine days after.
Total	14,500	7500	12,000	15,000
Polymorphonuclears	69 %	80 %	80 %	78 %
Large lymphocytes	14 „	4 „	4 „	8 „
Small „	16 „	10 „	10 „	14 „

Patient started with earache and slight discharge from the left ear.

(15) A. U——, female aged fifteen. Right-sided suppurative otitis media of many years' duration; right-sided facial paralysis; no nystagmus. Optic neuritis right disc. Hearing power *nil*; tuning-forks lateralised to left side; marked Rombergism. Radical mastoid operation and labyrinthectomy; cholesteatoma found invading cochlea.

(16) H. H——, male, aged eleven. Left otitis media suppurativa of four years' duration. Previous to admission had complained of severe headache, frequent attacks of sickness, and marked vertigo. Watch heard on contact: tuning-fork tests lateralised to left side. Caloric tests positive and rapidly obtained. "Fistula nystagmus" well marked; slight spontaneous nystagmus to right side. No optic neuritis. Temperature 99.6° F., pulse 56 to 96, respirations 20. Radical mastoid operation: Large fistula found in posterior part of external canal: wound left open.

(17) E. T——, aged thirty-two. Complete labyrinthectomy for chronic suppurative labyrinthitis eight months ago. Complete freedom from all symptoms.

(18) J. H——, male, aged forty-nine. Left suppurative otitis media of many years' duration; severe vertigo for five months. Facial paralysis: fistula nystagmus; well-marked Rombergism. Radical mastoid operation and exposure of outer labyrinthine wall; large fistula found. Facial paralysis much improved since operation, vertigo practically gone.

(19) J. K——, male, aged twenty-five. Chronic suppurative otitis media (left) of sixteen years' duration. Symptoms: Headache and dizziness. Hearing: Watch heard 2 in. from ear; tuning-forks lateralised to left ear. Caloric tests: Positive result obtained in fifteen to twenty seconds; fistula nystagmus well marked, also on pressing tragus inwards; no Rombergism. Operation (March 16, 1911): Post-aural operation: small cholesteatoma; large fistula on external canal; ossicles and membrane left intact.

(20) J. B——, male, aged twenty-eight. Bezold's mastoiditis; five weeks' earache, discharge; no facial paralysis, no vertigo, no emesis, no nystagmus. Cerebro-spinal fluid normal in colour and pressure; cedema and tenderness over apex of mastoid and in neck. Operation: Perforation of apex of mastoid below and in front; dura mater exposed in post-cranial fossa. Healed up well. Day report—blood counts:

	Before operation.	First day after operation.	One week later.	Three weeks after operation.
Total	14,800	12,000	9600	9000
Polymorphonuclears	65 %	65 %	75 %	53.5 %
Small lymphocytes	29 „	30 „	14 „	22.5 „
Large lymphocytes	16 „	15 „	4.5 „	13.5 „

Eosinophiles.

(21) A. A——, male, aged twenty-two. Right otitis media suppurativa of four months' duration. Temperature 99.6° F., pulse 103. Free discharge from ear: prolapse of postero-superior meatal wall; tenderness and oedema over apex and down side of neck; on deep pressure pus welled up into ear: slight facial paralysis of three weeks' duration. Operation: Mastoid cortex thick, apical fistula; diseased cells cleared out, drainage-tube passed into neck.

(22) T. F——, male, aged eighteen. Chronic right suppurative otitis media of many years' duration. Extensive cholesteatoma from middle fossa to apex of mastoid and exposing lateral sinus. Operation (October 6, 1910): Complete post-aural operation.

(23) H. R——, male, thirty-four. Three weeks' history of suppuration: small perforation in posterior segment of left tympanic membrane; mastoid periostitis and post-auricular abscess. Operation (September 29, 1910): Fistula into antrum; large cholesteatoma extending backwards and exposing area of cerebellum. A complete radical mastoid was performed.

(24) T. L——, aged twenty-two. Otitis media suppurativa of several years' duration: pain over mastoid; profuse discharge; cholesteatoma found: lateral sinus exposed at bottom of wound, perisinus abscess. Lateral sinus opened to allow of removal of cholesteatoma surrounding it. Treatment by application of "scarlet red" (4 per cent. solution in olive oil).

(25) M. M——, aged seventeen. Acute mastoiditis; extra-dural abscess in posterior fossa. Mastoid cells opened; disease traced backwards; posterior fossa opened and large extra-dural abscess evacuated.

(26) F. M——, aged forty-one. Chronic right suppurative otitis media (twenty-five years' duration): extensive cholesteatoma in posterior fossa reaching as far as internal auditory meatus.

(27) F. W——, female, aged seventeen. Chronic suppurative otitis media (left) of three years' duration; mastoid periostitis. Operation (August 10, 1911): Radical mastoid with preservation of ossicles and membrane; small antrum containing cholesteatoma.

(28) W. A. B——, aged sixteen. Three weeks' history of nasal discharge: fistula through floor of frontal sinus; very extensive orbital cellulitis. Frontal sinus opened up; dura mater of anterior fossa found largely exposed; large drainage-tube passed into nose; partial closure of external wound at time of operation.

Demonstration of Cases.—F. H. Westmacott, F.R.C.S.—(1) *Radical Mastoid.*—Operation, November 21, 1911: healed, April 23, 1912. Posterior wound left open to granulate. Posterior wall of cartilaginous meatus excised.

(2) *Inclusion Cyst in the Meatus after a Radical Mastoid Operation.*—A boy, aged nine. A bluish, non-pulsating polypoid protrusion was present in the opening of the meatus. This came gradually after discharge from an infectious disease hospital, where the operation was done. The cyst burst three weeks ago, and blood-stained fluid came away. The cyst is now filling up again.

(3) *Chronic Hyperplasia of Superior Maxilla.*—Slow enlargement of maxilla, with invasion of Highmore cavity by spongy-like bone. Microscopical examination shows no sign of inflammation or new growth. Described in "Dreschfield Memorial Volume," 1908. Removal of growth November 3, 1908.

Demonstration of Cases.—J. Arnold Jones, F.R.C.S.Ed.—(1)

Hysterical Deafness.—Girl, aged five. First seen in 1910. Had been quite well up to six months previously; she had then run into a lamp-post, and had hurt her nose and "got two black eyes." No loss of consciousness; was not confined to bed; had no further symptoms. Two days after the accident ceased to speak or hear, both of which she had previously been perfectly capable of. No tinnitus or vertigo. On examination: Wax removed from both external auditory meati; drums slightly retracted; adenoids and enlarged tonsils present. The child took no notice of voice, tuning-forks, or loud noises. Four months later adenoids and tonsils removed; no improvement followed. No other hysterical stigmata have been observed.

(2) *Hysterical Deafness.*—Girl, aged ten. Went to bed on November 27, 1910, quite well in every respect; awoke on November 28 stone deaf. First seen December 1, 1910; no tinnitus or vertigo. On examination: Both drums slightly retracted; adenoids present. Examination with tuning-forks, voice, etc., proved contradictory—*e.g.* she denied hearing loudly vibrating forks, but once or twice declared she heard forks which were not vibrating. Bone-conduction apparently much reduced. No history of previous organic disease. Adenoids removed in hospital, January, 1911. Nurses testified that at times she replied to ordinary voice. About this period she had one or two attacks of temporary blindness and aphonia. Has remained deaf to the human voice ever since. Has had inflation, oto-massage, and various drugs.

(3) *Stapes removed with Aural Polyp; Improved Hearing.*—Patient was operated on for removal of an aural polypus on April 11, 1912. Polypus removed by snare in usual manner. After removal the stapes was noticed to be attached to the distal end of the polypus. Recovery entirely uneventful; suppuration cured; hears better than before operation. (Stapes shown in bottle.)

(4) *Radical Mastoid Operation for Cure of Chronic Suppuration; Fistula, External Semicircular Canal.*—On January 7, 1911, patient complained of vertigo of six weeks' duration, and chronic suppuration in the right ear of many years' duration. Pain in right ear. On examination, Pus in external meatus; aural polyp, and bulging of post-suppurative mental wall; slight mastoid tenderness. Caloric (cold) test produced no response, probably on account of polyp and obstruction in external meatus. Radical mastoid operation performed on February 2, 1911. Much necrosis of bone, especially in neighbourhood of the Fallopian aqueduct; fistula, external semicircular canal; granulations present in fistula. These were gently curetted—usual mental flap. Uneventful recovery. June 6, 1912: Response to caloric (cold) test in forty seconds.

Demonstration of Cases.—T. H. Pinder, M.R.C.S.—(1) *Radical*

Mastoid (Left Ear) and Radical Mastoid and Temporo-sphenoidal Abscess (Right Ear).—Symptoms: Pain, headache, vomiting, head-retraction; Kernig's sign present: temperature 103° F., pulse 120. After admission pulse dropped to 72, temperature 97.6° F. Operation (October 12, 1906): Complete post-aural operation; extra-dural abscess over lateral sinus and large area of cerebellum; temperature 99° F., pulse 75. October 15: Fainting frequent. October 17: Fainting frequent; temperature 99° F., pulse 55; very drowsy; consciousness impaired; pupils widely dilated. Operation (October 17, 1906): Temporo-sphenoidal lobe exposed; large abscess found containing at least 2 oz. of pus and shreds of necrosed brain-tissue; rubber drainage-tube inserted. October 18, 1906: Con-

sciousness returning; no more vomiting. October 22, 1906: Swelling and œdema of right optic disc; difficulty experienced in drainage of abscess; two tubes inserted, one large one just into abscess cavity and a smaller one inside the larger right up to wall of abscess. November 20, 1906: Abscess drying. December 18, 1906: Slight discharge. February 20, 1907: Middle ear and abscess quite dry. The hearing on both sides is at present so good that she plays the mandolin in public as a member of a band.

(2) *Left Chronic Suppurative Otitis Media; Lateral Sinus Thrombosis*.—H. W.—, aged twenty-one. Suppurative otitis media of fourteen years' duration. Symptoms: Pain, headache, repeated rigors, mental apathy; temperature 104.4°F . Operation (April 10, 1912): Post-aural operation; antrum contained pus under tension and a cholesteatoma which ran backwards and exposed the lateral sinus, and also a large area of the middle fossa. The sinus wall was gangrenous and its lumen was filled with thrombus for one and a half inches of its length. After operation the temperature dropped, but in the course of the next day patient had a slight rigor, which was repeated with greater severity the following day (temperature 105°F .). Operation (April 13, 1912): Ligature of internal jugular. The temperature remained high, but no rigors occurred. There was a little effusion at the base of the right lung which cleared up in a few days. The temperature and pulse came down to normal in about ten days.

(3) *Acute Mastoiditis (right); Lateral Sinus Thrombosis*.—E. W.—, girl, aged six. Acute otitis media three weeks before admission. Symptoms: Pain and headache, vomiting and repeated rigors; temperature 100.2°F ., pulse 110, respirations 20. Two rigors occurred the day after admission (temperature 104°F .). Operation (August 12, 1910): Antrectomy (antrum appeared normal); circum-sinusal abscess found on exposing lateral sinus. The sinus wall appeared normal, but on opening it a clot one inch in length was found; it had begun to break down. The thrombus was removed and the internal jugular vein ligatured. High temperature and rigors continued after the operation for two or three weeks. After that time the rigors ceased and the temperature gradually came down to the normal. Ear quite dry and wound healed on discharge from hospital.

(4) *Right Chronic Suppurative Otitis Media of six months' duration; Lateral Sinus Thrombosis*.—Symptoms: Pain, headache, mastoid perioritis, Bezold's mastoiditis; temperature 102.4°F . Operation (July 6, 1906): Incision of mastoid abscess and free incision of cervical abscess. On July 10 patient had a rigor; temperature 104.8°F ., pulse 130. Operation (July 11, 1906): Post-aural operation; cholesteatoma; sinus exposed, no perisinusal abscess, and sinus pulsating. On July 12 and 13 rigor again occurred. Marked internal squint. Operation (July 13, 1906): Sinus opened and large clot removed; free hæmorrhage from torcular end of sinus; outer wall of sinus excised; slight oozing from jugular end. July 15, 1906: Rigor repeated; temperature 105.2°F . Operation: Ligature of internal jugular. July 16, 1906: Rigors repeated (three times); temperature 106.2°F .; optic neuritis and septic choroiditis. The rigors continued till July 20, after which they were not repeated. The temperature gradually fell to normal. Squint quite recovered by September 25, 1906.

Demonstration of Cases.—D. Lindley Sewell, M.B.—(1) *Chronic Suppurative Otitis Media (Left); Lateral Sinus Thrombosis*.—L. T.—,

male, aged twenty-one. Left chronic suppurative otitis media of five or six years' duration. Symptoms: Pain and headache, vomiting, repeated rigors; temperature 100.4° F., pulse 100, respirations 18. Cerebro-spinal fluid normal. Patient was admitted about 8.30 p.m., and at 10 p.m. had a rigor; temperature 103.6° F. Operation (October 14, 1911): Post-aural operation; mastoid full of granulation-tissue and pus; lateral sinus exposed and appeared to be gangrenous and was surrounded by a perisinus abscess. The lateral sinus was opened and a clot two inches in length removed; it did not appear to have broken down. The jugular vein was *not* ligatured. The post-aural wound was closed three weeks after the operation.

(2) *Chronic Left Suppurative Otitis Media; Lateral Sinus Thrombosis.*—W. F.—, aged twenty-four. Left suppurative otitis media of many years' duration. Symptoms: Pain (headache), repeated rigors, no vomiting; temperature 101.2° F., pulse 100, respirations 20. Hearing: watch not heard; tuning-fork lateralised to left side; caloric tests positive; no fistula symptom. Cerebro-spinal fluid: tension increased, slight increase of albumen, otherwise normal. Rigor occurred on evening of admission (October 27, 1911). Operation (October 28, 1911): Post-aural operation; mastoid contained cholesteatoma; large and very foul collection of pus around lateral sinus. The sinus itself contained a thrombus of 2 in. in length extending towards the jugular bulb. It was decided not to ligature the internal jugular owing to patient's condition, which was bad. There was marked improvement for the first day, but on the day following that patient had two rigors (temperature 103.6° F. and 105° F.). Operation: Ligature of internal jugular: the vein was tied in the neck and traced upwards to the mastoid; it was then washed through from the neck to the sinus by syringing with lotion. No further rigors after second operation.

(3) *Cerebellar Abscess following Chronic Middle-ear Suppuration (right).*—R. C.—, male. Right chronic suppurative otitis media of many years' duration. Symptoms: Pain (referred to right occiput) and headache, vomiting, vertigo and mental hebetude. Condition of ear: large granulation seen in meatus—ear discharging freely; temperature 98° F., pulse 54, respirations 14. Spontaneous nystagmus towards same side as lesion; slight congestion of right optic disc. Operation (April 18, 1912): Post-aural incision; pus and cholesteatoma in mastoid and antrum; exposure of lateral sinus and exploration of cerebellum between the lateral sinus and external semi-circular canal; abscess containing 3 oz. of pus found and dried.

(4) *Right Chronic Suppurative Otitis Media; Lateral Sinus Thrombosis.*—E. F.—, female, aged nineteen. Right suppurative otitis media of sixteen years' duration. One week's history of acute illness, pain, mental dulness, headache, rigors, no vomiting; temperature 98.2° F., pulse 72, respirations 20. No nystagmus, ptosis, or optic neuritis. Cerebro-spinal fluid: Tension raised, otherwise usual. Patient admitted about 10 p.m.: at 4 a.m. a rigor occurred; temperature 104° F. Operation (July 27, 1910): Post-aural operation; middle ear filled with granulations; mastoid contained cholesteatoma; radical mastoid emptied and then the lateral sinus was exposed. A perisinus abscess was first found, and on incising sinus wall a clot was seen; this was removed and the sinus packed. The jugular vein was not ligatured.

(5) *Chronic Suppurative Otitis Media; Labyrinthine Fistula.*—Suppurative otitis media of many years' duration. Symptoms: Dizziness, especially on syringing the ear; severe though occasional headaches, no

pain. Hearing: Watch heard 1 in. from ear; tuning-forks lateralised to diseased ear. Caloric tests. Positive results obtained in fifteen seconds; fistula nystagmus well marked, both on compression with bag and on pressing the tragus inwards. Condition of ear: Large perforation in posterior segment, not very active suppuration. Operation (August 17, 1910): Post-aural operation: mastoid very hard and sclerosed; necrosis chiefly confined to antrum; large fistula seen on external semicircular canal; this was left untouched and the complete radical operation performed. Vertigo complained of at first few dressings, but quite disappeared afterwards. No return of symptoms.

(6) *Temporo-sphenoidal Abscess (right), following Chronic Suppurative Otitis Media.*—G. H.—, female, aged thirty. Right suppurative otitis media of twenty-five years' duration. Symptoms: Pain—headache over right eye and temple (fourteen days' duration), vomiting not related to ingestion of food: temperature 99.4° F., pulse 64, respirations 18. Hearing: Watch not heard at all; tuning-forks lateralised to the right side. Caloric tests negative; no "fistula nystagmus." Condition of ear: Small granulation in ear; large perforation in posterior segment; necrosis. Reflexes: Knee-jerks exaggerated; no ankle clonus; Babinski's reflex (left side). Cerebro-spinal fluid: Tension raised, slightly turbid, increased polynuclear leucocytosis, slight increase of albumen, glucose 0.2 per cent. Blood-count: 14,000 white cells. Operation (February 29, 1912): Post-aural operation: pus under tension in antrum; large cholesteatoma in mastoid; middle fossa exposed, dura incised and brain explored; abscess containing 1 oz. of pus found in temporo-sphenoidal lobe, very superficial; large rubber drainage-tube inserted.

(7) *Right Suppurative Otitis Media and Extra-dural Abscess in Posterior Fossa.*—S. M.—, male, aged six. Right suppurative otitis media of three years' duration. Symptoms: Pain in ear and overmastoid, tenderness over mastoid; mastoid periostitis—displacement of auricle; temperature 100.4° F., pulse 110, respirations 20. Condition of ear: Large polypus in right meatus; ear discharging freely. Mental condition quite normal, and no sign of intra-cranial suppuration. Operation (August 12, 1910): Post-aural operation; the antrum and mastoid contained broken-down cholesteatoma. On tracing a cell backwards a large extra-dural abscess in the posterior fossa was found, exposing a large area of cerebellum.

Professor Elliott Smith gave a demonstration upon.

(a) *Mastoid disease in Prehistoric Egypt.*

(b) *The Central Auditory Paths.*

PROCEEDINGS OF THE ROYAL SOCIETY OF MEDICINE—LARYNGOLOGICAL SECTION.

June 7, 1912.

DR. STCLAIR THOMSON, *President of the Section, in the Chair.*

SPHENOIDAL SINUS DISEASE.

Four Cases illustrating Disease of the Sphenoidal Sinus.—**StClair Thomson, M.D.**—CASE 1.—Lady, operated on in January, 1909 (three years ago), for suppuration of some ten years' standing in all the

accessory sinuses of both sides, with the exception of both frontals. She had suffered considerably from her eyes. Persevering after-treatment was required in order to secure complete arrest of the sphenoidal suppuration, but for the last year and a half she has remained quite clear, except for an occasional small crust from the left ethmoid region. The ostium of the left sphenoidal sinus has somewhat contracted, but is still open and free from any pus. The right sphenoidal sinus is widely open. Over this opening two large posterior ethmoidal cells are easily seen.

CASE 2.—This lady came under my observation in 1908 complaining of chronic and severe pain over and through the left eye. From this she had suffered for six or seven years, and had consulted many ophthalmic surgeons both at home and abroad. One of these suggested an exploration of the sinuses, although she had never had other localising symptoms than an occasional yellow post-nasal discharge. It was therefore more as an exploration that the left mid-turbinal was removed and a large posterior ethmoidal cell opened. This contained a large collapsed polypus. Further ethmoidal cells were opened at subsequent sittings, and both sphenoidals were opened—all under cocaine. There was some muco-pus in both sphenoids. For two years both sphenoidal sinuses have been absolutely healthy. The right one is widely opened, but the ostium of the left is contracted. The patient has been greatly relieved, and has been able to use her eyes again, but still suffers from tenderness under the left orbit, and from a post-nasal discharge which cannot be located. She has seen several distinguished colleagues in consultation, but we have not been able to locate and cure this discharge. If not a simple naso-pharyngitis it must originate in some posterior ethmoidal cell.

CASE 3.—Patient previously been shown before the Section in connection with a discussion on frontal sinus operation.¹ She is now shown again to illustrate the permanence of the opening of the sphenoidal sinus. She had suffered intensely from headaches. The headaches recurred in spite of operations on the frontal, ethmoidal, and maxillary sinuses on the right side, and it was then that her sphenoidal sinus was opened and found to contain pus. The cure of these unilateral pansinuses has remained permanent for some years.

CASE 4.—Lady under observation since March, 1908. She has had several operations on the left sphenoid, ethmoid, and maxillary sinus. The left sphenoidal ostium has been widely opened, and the cavity has done well. But the patient for some years was greatly troubled by crust formation over the ethmoid region, and round the antro-nasal opening. She had vaccine treatment in 1909. The crust formation continued right up until spring of this year, in spite of long and persevering local medicines. In April last, just as it had been decided to start her on another course of vaccine treatment, the crust formation entirely ceased. There is now a little muco-pus from the ethmoid region, but the other sinuses on the left side remain cured.

Dr. WATSON-WILLIAMS said it was noteworthy that even if the sphenoidal sinus were kept open, in some cases the result was not good, while in others, although the sinus had almost closed up again, the "cure" apparently persisted. There seemed to be no definite relationship between the size of the opening of the sinus and the result achieved.

Dr. FITZGERALD POWELL said that in most of the cases there was some pus or muco-pus in the nose or naso-pharynx, and in all that he had questioned, the pain had not entirely disappeared in the head. In

¹ *Proceedings*, vol. iv, p. 123.

his own case there was still some pus, but the headache, especially at the occiput and back of the neck, had gone. In looking for a cause for this he had come to the conclusion that the openings were not free enough and did not extend low enough down to ensure dependent drainage. He considered the lower down in the anterior inferior wall the opening was made the better would be the results.

Mr. WAGGETT, referring to the question of keeping the opening widely free, asked what experience the President had had in the use of the chisel in removing the lower part of the anterior wall where it was too thick to be attacked with the punch forceps. The question of danger of the spread of osteomyelitis had to be considered.

Mr. HERBERT TILLEY said he had used a long chisel for removing the lower portion of the sphenoidal sinus. He did not think there was much danger in its use if one inspected the field of operation from time to time.

Dr. DAN MCKENZIE asked whether there was any means of shortening the period of chronic infection where a large dependent opening had been made, and yet the discharge and formation of crusts still persisted. He took it that was the rule to have such a period after nasal sinus suppuration. His experience led him to believe that in course of time this discharge naturally ceased and cure occurred. That time might, however, extend to two or three years.

Dr. WATSON-WILLIAMS recalled a case of sphenoidal sinus suppuration in which he believed he had got to the bottom of the mischief, and when probing the sphenoidal sinus after opening it the patient would complain that probing caused pain in the forehead. Again, cases which at first seemed to be frontal sinus suppuration showed later that they were sphenoidal suppurations and *vice versa*. He had had a case of sphenoidal suppuration which did not clear up, and the increasing local tenderness and redness led to the opening of the frontal sinus, when it was found that there was a frontal sinusitis. He thought the continuance of a suppurating focus in other sinuses or cavities might be the cause of persistence of secretion in a cavity which had been opened and which had improved, but only up to a certain point. As the question of opening the floor of the sinus had been touched on, he exhibited forceps for the removal of the floor of the sphenoidal sinus in cases in which, owing to the size of the sinus, it was thought a sufficiently free opening could not be obtained through the wall. There was a great tendency for the sphenoidal sinus cavity to close. And in the case of a small sphenoidal sinus, when the anterior wall and a portion of the floor had been removed and there was a persistent tendency to close, he had found that removal of the posterior portion of the vomer corresponding to the septum of the sphenoidal sinus, with the septum of the sinus, throwing both cavities into one, was sufficient to ensure persistent patency of the sphenoidal sinus. He did not advocate it as a matter of routine, but mainly for those cases to which he had alluded as suitable for this sphenoidal sinus septectomy.

Mr. HARMER asked whether the bacteriology of Case 2 had been investigated, as the nature of the crusts was interesting. It might be found to be some form of paratyphoid infection. Some of these cases of sinus disease seemed as if nothing more could be done for them, yet they sometimes cured themselves in course of time. A case had recently been attending hospital in which there had been several operations during the last twelve months without improvement; now the patient was quite free from discharge.

Mr. HERBERT TILLEY thought the President could do no more in Case 2 than he had done. It was practically impossible to say where the pus came from. If the patient had not declared that pus came away in the mornings, he would have said it was a perfect result of operative interference. There was no discharge when he saw her, and he would like to know whether the President had examined her in the mornings between nine and ten. There seemed to be a distinct neurasthenic element in the case. Her neuralgia was not necessarily due to the asserted suppuration at all; it might be caused by adhesions, or it might be a neuritis of the supra-orbital nerve without reference to disease in the underlying frontal sinus. He did not advocate further operation, but suggested a vaccine, or even treatment by suggestion.

Dr. VINRACE asked whether any refractive changes in the eyes had been noticed, particularly of one eye, coincidental with sphenoidal sinus disease. He believed that such changes might result.

Mr. DE SANTI narrated the case of a patient in whom the diagnosis was difficult. There were intense headaches, occipital chiefly, with pain about the left side of the nose, and the patient's mind was affected. She had enormous proptosis of the eye, and as the ophthalmic surgeon suspected sinus suppuration she was sent to him (Mr. de Santi). There was some rather thick, yellow, crusty discharge at the back of the naso-pharynx. Examination revealed swelling of the middle turbinal, but there was no evidence of disease in the frontal or other accessory sinuses. He concluded that the symptoms were not due to sphenoidal sinus trouble, and that the patient probably had cerebral tumour. Nothing was done to the nose, and two months afterwards the woman died. *Post-mortem* there was found to be a large sarcoma of the frontal lobe of the brain, which had invaded the orbit, and caused the proptosis and intense headache and pain over the nose. He had had three or four cases which proved fatal, in which there was tertiary syphilis with extensive necrosis and sequestra, and in which no operation would have been possible.

Mr. CYRIL HORSFORD said Case 3 reminded him of a similar case, in which there were such severe headaches that the patient was operated upon for cerebral tumour; at the operation, however, no tumour was found. Two or three years later he found that two or three sinuses were affected. The middle turbinal was intact; he could not see whether the sphenoidal sinus was involved. From the history given by the neurologist who saw the case it appeared to be sphenoidal sinus infection. It would have been possible to explore that sinus at the time of the operation on the patient. He opened the ethmoidal sinus and the antra, and found them diseased. The headache had now disappeared. It was important to be able to diagnose disease of the sphenoidal sinus at an early stage, particularly when the disease was limited to the sphenoidal sinus. He asked whether it was possible to get at and treat the sphenoidal sinus without removing the middle turbinate. He thought by so doing there was a risk of infecting the ethmoidal region, which was a serious matter.

Dr. KELSON asked whether the President had ever operated upon the sphenoidal sinus in a case of foetid atrophic rhinitis. Mention had been made of large crusts and oyster-shell-like masses which made one think of this disease. Clinically the cases seemed divisible into two great groups commonly met with: (a) the ordinary suppurating sinus; (b) those in which there were large crusts with a peculiar offensive odour—ozæna. Many of these latter Grünwald claimed could be cured by operating on the sphenoidal sinus, but they should not be confused with each other.

The PRESIDENT (Dr. STCLAIR THOMSON), in reply, regarded the

sphenoidal sinus as one of the most satisfactory to deal with. He had not had, nor heard of, a case of death from operation on the sphenoidal sinus; but in the *Transactions of the Medical Society of London* he had published two cases where death resulted from untreated sphenoidal sinus disease. The satisfactory results were obtained in some cases by repeated operation, and in others by leaving the patient alone. The treatment had to be both prolonged and intermittent, and he agreed that too much local interference did not seem to be good for all these cases; periods of rest must be given to allow the mucosa to settle down. After opening the sinus he usually recommended the patient to go into the country for three weeks. Afterwards he further enlarged the opening, and if necessary enlarged it yet again. He found a difficulty in getting away the lower bony part. He had been afraid of chisels slipping on to the thin part of the back. He regretted that he had never used the electric burr. In addition to opening the sinus he washed it out, wiped it with peroxide of hydrogen, and applied silver and argyrol plugs for twelve or twenty-four hours. He had never curetted the inside of a sphenoidal sinus. One patient, an actor, whose case had been his despair, and who was very neurasthenic, got a part to play in America, and when he had been at sea three days the condition disappeared! In Case 2 he had repeatedly examined the patient in the morning; he had never seen pus in her nose, but he had seen muco-pus on the roof of her nasopharynx, always in the mid-line, such as occurred in many people whose ethmoid had been removed. On one occasion a case of malignant growth of the pituitary body was sent to him as probably a sphenoidal case, but skiagrams showed the growth from which the patient died. In former years he had opened the sphenoidal sinus on account of ozæna, but he thought this made it worse. The ostium would often close from swelling of the mucosa round the lips. Contraction of the orifice by means of healthy scar-tissue he regarded as favourable. He had not had a case of osteomyelitis. He had had numerous cases in which the associated eye symptoms were undoubted, not only from their presence, but also from their disappearance.

Demonstration of Exhibits illustrating Disease of the Sphenoidal Sinus.—**P. Watson-Williams, M.D.**—(1) Instruments formerly in use for sphenoidal sinusitis: (a) Aspirating needle and trocar used in 1896. (b) Cone-shaped trephine used for opening sphenoidal sinus in February, 1897. (c) Sphenoidal sinus-cutting forceps, 1898.

(2) Dr. Watson-Williams's instruments now used in sphenoidal sinusitis: (a) Sphenoidal sinus exploring syringe with blunt trocar and cannula. It can be used without previous removal of any portion of the turbinal. (b) Small sphenoidal sinus and ethmoid-cutting forceps. For removing the anterior wall of the sinus and the posterior ethmoidal cells. (c) Large sphenoidal sinus-cutting forceps. (d) Cutting forceps for removing the sphenoidal sinus floor.

(3) Diagrams showing (a) sphenoidal sinus-exploring cannula *in situ*; (b) small cutting forceps removing the anterior sinus wall.

(4) Specimen of polypi removed from sphenoidal sinus and stereogram showing polypus growing from sphenoidal sinus (Zuckerlandl).

(5) Drawing showing the exhibitor's method of removing the sphenoidal sinus septum and the posterior half inch of the corresponding part of the nasal septum—sphenoidal septectomy—for double sphenoidal sinus suppuration.¹

¹ We hope to publish a brief account of the method in a later issue.—ED.

(6) Stereogram showing the sphenoidal sinus extending back to the foramen magnum (Zuckerkandl).

(7) Plates showing the optic canal in relationship with the sphenoidal sinuses.

(8) Stereoscopic skiagrams of the sphenoidal sinuses.

(9) Skiagrams showing probes in the sphenoidal sinuses of patients.

(10) Charts of the visual fields in sphenoidal sinusitis.

(11) Photograph of case dying with cavernous sinus thrombosis from sphenoidal sinus suppuration.

Lateral Skiagram of Skull showing Sphenoidal Sinus and Sella Turcica.—**Herbert Tilley, F.R.C.S.**—The case showed how excellently the depth of the frontal sinuses could be seen by means of a skiagram. The patient had double optic neuritis, for which the cause could not be found. There was no suppuration in the sphenoidal sinus, and it was thought possible that a pituitary tumour might be pressing on the optic nerve, but the sella turcica was clear.

The PRESIDENT said that skiagrams showed how deep from the orifice was the bottom of the sphenoidal sinus; so that the drainage, except by the ciliated epithelium, was not good. One of the instruments was in the sphenoidal sinus, and the other was in the posterior ethmoidal cell, so that the latter must be over the top of the sphenoid.

Unilateral Atrophic Rhinitis in which the Ostium of the Right Sphenoidal Sinus is well seen.—**Herbert Tilley, F.R.C.S.**—Female, aged forty-six, has suffered from "nasal catarrh" for thirty years. The usual appearances of atrophic rhinitis are obvious in the right nasal cavity. The septum is deflected to the left side. Possibly the conditions in the right nasal cavity are due to long-continued sinus suppuration in an abnormally patent nasal cavity.

[Since the above note was made, a chronic empyema of the right antrum has been drained.]

Mr. TILLEY added that the opening into the sinus was obvious under cocaine. The case raised the question of the advisability, or otherwise, of correcting a deflected septum so as to allow less air to pass through the right nasal cavity, which was abnormally wide.

The PRESIDENT said he had thought of straightening the septum in these cases, as recommended by Dr. Mermod, of Lausanne, but he had not cared to urge a patient to have it done.

Dr. DAN MCKENZIE said that three years ago he had a case with unilateral atrophic rhinitis in which the septum was markedly deviated. He operated on the septum, doing a submucous resection, and the result to the atrophic rhinitis was very satisfactory. Obviously there was some risk in the operation, because the septum became thinned as the result of the operation; and if the other side was made a little too patent there was the risk of leaving the patient with atrophic rhinitis on both sides, instead of on one.

A Patient in whom all the Sinuses were operated on some nine years ago for Chronic Suppurative Sinusitis.—**Herbert Tilley, F.R.C.S.**—Female, who had suffered since an attack of enteric fever from a profuse purulent nasal discharge, general ill-health and headaches. All the sinuses were opened and drained with the result that the suppuration was entirely cured, the headaches ceased, and her health so improved that the patient has steadily and successfully followed her

vocation as a nurse. The openings into each sphenoidal sinus are easily seen.

Mr. TILLEY added that among the many cases in the early days of sinus surgery in this country, this was the most satisfactory of the cases he had dealt with. The patient had been through many vicissitudes, and there were three or four separate operations. At first she refused to have the frontal sinuses touched, but eventually they were opened, as well as the sphenoidal sinuses. She had lost all her former headaches, there was no nasal discharge, her general health had been excellent since the operation, and the cosmetic result left little to be desired.

The PRESIDENT said Mr. Tilley's case was of the type of case which would always remain cured. The patient might get influenza and secrete muco-pus for ten days, but she would not be troubled with her sphenoidal sinus again in this life.

Two Cases of Disease of the Sphenoidal Sinuses.—W. Stuart-Low, F.R.C.S.—CASE 1.—A man, aged thirty-eight, who has suffered for years from tertiary nasal trouble. Both maxillary antra were opened from the nasal cavity for chronic sepsis, and the sphenoidal sinuses were also similarly affected. The interior of the right sphenoidal sinus can be clearly seen, the anterior wall having been removed; it is deep and narrow. The left is wide and shallow, and the frail anterior wall has been taken away. When the right sphenoidal sinus is swabbed out a sharp, fugitive pain is at once felt deeply in the right occipital region. The nasal bridge had quite fallen in, but his appearance has been greatly improved by repeated small solid paraffin injections. CASE 2.—A woman, aged forty-three, who suffered for many years from nasal discharge and headaches. A year ago her sight began to be affected, especially in the right eye, and six months ago she could only count fingers with this eye. She could still read print with the left eye, but about this time the field of vision on this side began to be affected, and a triangular scotoma was discovered passing in towards the fixation point. The ethmoid region on the left side was the seat of sepsis and mucous polypi, and she had very severe frontal headaches, most marked on this side. The Ogston-Luc operation was performed on the left side, and at a later date the sphenoidal sinus opened by the removal of the anterior wall; these sinuses were found full of pus and polypi. Since these operations contraction of the field has become arrested. As there is still considerable impairment of vision, it is proposed to remove all the middle turbinal on the right side and open up this sphenoidal sinus similarly to what was done on the left side. From the peculiar way in which the ocular fields were affected, it is likely that septic infection had taken place through the sphenoidal sinus roof, so that the fibres of the optic tracks lying next the bony roof were first affected.

Sphenoidal Sinus Suppuration with Disease of the Antrum and Ethmoidal Cells.—W. H. Kelson, M.D.—Woman, aged twenty-three. Symptoms first noticed at the age of fourteen, when discharge of pus took place suddenly from the nose as though an abscess had burst. Has always had more or less pain—referred to the centre of the head and frontal region. The left antrum, ethmoidal cells and sphenoidal sinus were found to be involved; the former were treated by operation and the latter by lavation, enlarging the opening, and applications. Marked improvement has taken place, but some discharge still remains. Sight has not been tested, but patient states that it is excellent in both eyes.

DR. DAN MCKENZIE said that on one occasion when opening or enlarging the sphenoidal sinus by means of the Hajek hook he broke the hook off, it remained *in situ* fixed, and he could not get it out. Next time the patient came, however, she brought it in an envelope.

MR. STUART-LOW said that in his cases the sinus was well opened, and therefore there was not any likelihood of future trouble. This he had accomplished by means of the use of Hajek's hook and spoons; these he had found to be the most effective instruments for the purpose, and he strongly recommended them to the members.

THE PRESIDENT said the Hajek hook had never been of service to him, and had proved awkward by breaking off. These openings must be enlarged, and one must have punch forceps or rotate a Meyer's ring knife, or Luc's or Grünwald's forceps. More effective and powerful instruments were required than were available at present. He thought the electric burr could be safely and effectively used for these cases.

DR. KELSON, in reply, said he had examined the case frequently, and he did not think that the pus came from the frontal sinus, but from a fronto-ethmoidal cell.

Cannula and Stylet used for making Applications to the Sphenoidal Sinus.—W. H. Kelson, M.D.—By using these instruments contamination from the nose is avoided, and the application is prevented from coming into contact with parts other than those for which it is intended.

Sphenoidal Sinus operated on and Cured of Suppuration of Some Years' Duration.—H. Fitzgerald Powell, M.D.—Female, aged twenty-nine, had been suffering from post-nasal discharge on left side which came down the back of her throat in purulent clots. She had very severe headache, especially in the back of her head and neck. This had been going on for some years. When seen this discharge was found absent in the front of the nose, but coming out of the left nasal opening behind. Both maxillary antra were quite clear on transillumination. She was treated by inter-nasal irrigation, etc., and her ethmoid removed by curetting, which improved her condition, but the discharge and pain continued in a lesser degree. On October 26, 1911, under a general anæsthetic, the inferior wall of the left sphenoidal sinus was broken down with small burrs, and the sinus washed out regularly up to April, when the pain had completely disappeared and only a small quantity of discharge was present. May 30: This patient had absented herself from observation and stopped the washing out, and when seen on May 30 was found with some discharge, but no pain in the head or neck.

DR. DAN MCKENZIE said he supposed it was the general experience that operations on the sphenoidal sinus were associated with a good deal of bleeding. In the first case he operated on he was surprised at the amount of bleeding from the region, where there seemed to be but little spongy tissue. He asked whether that was the experience of others, and whether it was the custom to pack. He had never felt it necessary to do so.

MR. EDWARD D. DAVIS said that in one case there was a good deal of bleeding; the punching was done near the septum, and may have injured the sphenopalatine artery. But a small plug soon checked the bleeding.

MR. ROSE said he knew of a case in which, after a sphenoidal sinus operation, the patient was seriously ill from the severity of the hemor-

rhage. At the operation itself the bleeding was not very severe; it came on some hours afterwards.

Mr. HERBERT TILLEY remarked that when intending to operate in a sphenoidal sinus case it was desirable to apply cocaine and adrenalin fully twenty minutes before the general anæsthesia, so as to get the parts more or less anæmic; at the operation peroxide of hydrogen should be used on the swabs, as that stopped the oozing from the mucous membrane.

The PRESIDENT had read of cases where slight hæmorrhage at the time or afterwards gave rise to great trouble. But when he had enlarged the opening by clipping away bone, under cocaine, he had never had hæmorrhage. Under chloroform these cases were never very troublesome, and were checked by peroxide. He had his cases prepared a full hour before the operation, which gave a better and more lasting ischæmia. Preparing with cocaine and adrenalin was an art; it was of no use to leave that to the latest appointed house-surgeon, and it must be applied directly to the actual points, in fact "papered" along the nose and the front of the sphenoid. Also it was advisable to apply it on both sides.

Dr. FITZGERALD POWELL was cheered by the sanguine view the President took, and the way he spoke in reference to the sphenoidal sinus operation, because he had felt some trepidation in attacking cases in which difficulty was found in getting a good view of the ostium. Nevertheless he could not help feeling that this operation, which necessitated the removal of the turbinate and opening up of ethmoidal cells in addition to the cutting away of the sphenoidal wall, was not unattended with danger, and he thought that the operation should be approached with care and due consideration.

Extensive Ethmoidal and Sphenoidal Sinus Disease on both Sides.—Cyril Horsford, F.R.C.S.—The cells had been thoroughly opened and the anterior wall of sphenoidal sinus removed. The openings and interiors of the sphenoidal sinuses were clearly visible. Mr. Horsford used Grünwald's modified forceps (oval cutting). He turned the instrument upside down and punched the lower floor.

Left Sphenoidal Sinus Suppuration.—G. Seccombe Hett, F.R.C.S.—Man, aged thirty-five. The sinus was opened in January, 1911. Subsequently the opening was enlarged by means of sphenoidal sinus forceps. Cavity gently curetted and AgNO_3 applied to interior. The left antrum, frontal sinus, and ethmoidal cells had previously been operated on. A submucous resection was also done to allow of access, as the cavity was very narrow owing to a septal deflection.

The PRESIDENT said one of the benefits stated to result from submucous resection was that there was good drainage. To him it was always a question in these cases which to do first. One might do the submucous resection and put in light plugs of sterilised rubber, and then run the risk of damming up the discharge in forty-eight hours. If one operated on the sinus and did not put in a plug, after resecting the septum, the flaps might not keep together, and there might be an abscess or hæmatoma of the septum which might become infected.

Mr. HORSFORD had recently operated on two cases, in one of which there was much pus on both sides of the nose. The deviation was so marked on one side that he could not get at it properly, so he resected, and on the divided septum he placed a splint, and lightly packed with

gauze for twenty-four hours. He removed the gauze early, and left the septum to be supported a little longer by the splint. In another case he resected the septum and spur on one side, and on the same side there was an antrum full of pus. He operated on the septum first, and radically treated the nasal antrum on the same side, putting in, in that case also, a rubber splint on the same side. Both cases did very well.

Dr. DAN MCKENZIE packed his nasal suppuration cases with gauze after doing the submucous resection, though he confessed he did it with some trepidation. He left a little passage above the plug for the drainage. He had never seen the temperature rise after operating on the septum in those cases, and his rule had been to do the septum first and the sinus later.

Mr. ROSE said he could recall five cases in which he did submucous resection before operating on the suppurating sinus. He was very nervous as to what the result would be in the first case. He had used the ordinary packing, gauze or wool, enclosed in a rubber finger-stall which filled up the nasal cavity thoroughly. Nothing unpleasant happened. The packing was left in for thirty-six hours, and the sinus was operated upon at a later date.

Dr. W. HILL remarked that an instrument resembling two gridirons with a spring had been devised by Brünings for cases requiring drainage for the sinusitis, and at the same time to prevent a hæmatoma from forming in the septum. The idea seemed good, but when he (the speaker) had wanted to use the instrument it never seemed to fit in that particular case. Mr. Rose had just told him that he had once used Brünings' instrument, but there was a hæmatoma all the same. Perhaps this was due to its getting out of position.

Mr. HERBERT TILLEY pointed out the danger of patients turning over in their sleep and displacing instruments which projected from the nose.

Mr. EDWARD D. DAVIS in two cases had treated the sinus suppuration and performed a submucous resection of the septum at the same time. He used solid rubber "splints" for twenty-four hours. There was no rise of temperature, and the patients did well.

The PRESIDENT regarded Mr. Hett's suggestion for using a hollow rubber drainage-tube as a good one, as it kept up sufficient pressure and yet allowed drainage. He recommended the rubber sponge plugs which were first introduced by Brünings. He had given up using cotton-wool, and he would be afraid to use gauze, as it retained the discharge and blocked the passage; moreover, the rubber sponge came out more easily than anything he had seen.

Growth on the Left Vocal Cord.—G. C. Cathcart, M.D.—Twenty-two years ago the patient, then aged thirty-six, was supposed to have a malignant growth on the left vocal cord. The late Sir H. Butlin, Sir Felix Semon, and Dr. P. McBride said it was undoubtedly malignant. Sir H. Butlin performed laryngo-fissure, but found on opening the larynx that the growth was not malignant. The cord was scraped and the condition described as leukoma. The voice was perfect up to five years ago, when it became hoarse. There is now a small growth on the left vocal cord, which is probably either a papilloma or a fibroma.

The PRESIDENT said he did not think the patient was any worse for the laryngo-fissure, as the vocal cords were moving freely.

Laryngeal Growth for Diagnosis.—F. W. Bennett, M.D.—Noisy respiration for six weeks. No pain. No other subjective symptoms beyond hoarseness for five months. Patient thought onset due to severe cold. Some pulmonary (? tuberculous) trouble three years ago. Growth punctured three days ago, but no pus escaped. Right cord immobile, with large, smooth swelling posterior and external to the right arytaenoid region.

The PRESIDENT said the case did not raise, in his mind, the question of either malignancy, syphilis, or tubercle. The swelling was in the outer surface of the post-cricoid region and seemed to be non-malignant. It reminded him of a case under Sir Felix Semon, which he thought was a fibroma and which was operated upon from the outside with a good result. There was a drawing of it by Mr. Waggett in the *Proceedings* of eight or ten years ago.

Mr. HARMER said the growth could be distinctly felt in the neck, as well as seen from inside the larynx. It was fairly extensive, and was probably encapsuled. It reminded him of a case of endothelioma in the lateral pharyngeal wall. It seemed to be suitable for removal from the outside, without opening the larynx.

Suppuration in the Accessory Sinuses.—H. J. Davis, M.B.—The skiagram showed a Hajek's hook in the sphenoidal sinus. The limits of the cavity were well shown. The patient was a girl, aged twenty-two, who had been operated on for double frontal sinusitis and double maxillary sinusitis. The discharge, however, never ceased, and continued for months. She was treated with vaccines with only slight benefit. When the sphenoidal sinuses were later thoroughly opened up the discharge ceased. At no time were any eye symptoms present. The exhibitor has not seen the case for two and a half years.

PROCEEDINGS OF THE AMERICAN LARYNGOLOGICAL, RHINOLOGICAL, AND OTOLOGICAL SOCIETY.

Seventeenth Annual Meeting, Atlantic City, June 1, 2, and 3, 1911.

Report by DR. L. M. INGRAM.

Thursday, June 1, 1911.

(Continued from p. 400.)

A Report of Twelve Cases operated upon by the Yankauer Method for Closure of the Eustachian Tube.—Dr. Samuel McCullagh (New York City) reviewed the histories of the twelve cases treated by him according to this method. The cases were of two classes—those in which a radical operation had been performed, and those in which no operative treatment had been undertaken. Of the two cases in the first class, one was cured and one improved. Of the nine remaining cases, three were cured, five were improved, and one was classed as unimproved, the patient having passed from observation. This gave 33 per cent. cured, 56 per cent improved, and 11 per cent. not improved. Of the

three cases cured in the second class of cases the time elapsing between the operation and cessation of the discharge was six weeks, four weeks, and six weeks. Of both classes 36 per cent. were cured, 55 per cent. improved, and 9 per cent. not improved. Eliminating the case that was lost sight of, 40 per cent. were cured and 60 per cent. improved. In the cases noted as improved, all so classed have expressed their satisfaction at the results of the operation.

Conclusions could not be drawn from so limited a number of cases, but the results obtained had convinced him that the method is a valuable and simple procedure, which eliminates the necessity for radical operation in a certain percentage of cases.

Dr. SIDNEY YANKAUER (New York City) emphasised certain points with reference to the indications for this operation. Consideration of the pathology of chronic suppuration would lead to a realisation of the fact that all cases originate in disease of the naso-pharynx, and that where disease of the ear has existed as long as in many of the cases reported, various pathological changes have taken place in the middle ear and mastoid cells. Some of these changes are very slight, while in others they are of greater severity; that there may be slight changes in the ear, necrosis in the attic, disease of the mastoid cells, collections of pus around the sinus, or in the subdural space, etc. In order to cure chronic suppuration two surgical factors are necessary: first, to drain the purulent area, and second, to prevent re-infection. Re-infection taking place through the naso-pharynx must be prevented by preventing the entrance of the germs through this region. This may be accomplished in various ways. An autogenous vaccine may be used; if properly made and employed this will destroy the kind of germs from which it is made wherever they may exist in the body. But there is no way of knowing that a new infection will not arise. The only way to prevent such a contingency is to close the Eustachian tube. When the radical operation is done the tube can be easily reached. Just as in the radical operation it is necessary to close the tube in order to secure healing of the parts, so it is in other cases. In all the minor operative procedures which can be carried out through the canal, success will result if the tube is closed. Whatever the form of treatment the closure of the Eustachian tube is a necessity. This should be the first thing to be done. His own experience has shown that a certain number of cases will be cured by simple operations on the middle ear, others will always require radical procedure.

Dr. NORTON L. WILSON (Elizabeth, N.J.) had had several cases cured by this operation, two of which he desired to report. The first had been under observation for over two years. The Heath operation was performed, without improvement; autogenous vaccine was employed for three months and still the suppuration continued. After the Yankauer operation a permanent cure resulted. In the second case the ear had been discharging for years. This was checked by the operation under discussion. Hearing was diminished, and the patient, who was neurasthenic, constantly complained of a sense of fulness in her ear.

Dr. S. J. KOPETZKY (New York City) said the technique of the operation is very simple and easily performed. He has employed the method in nine cases, only one of which was cured. In two others the results were doubtful, because although they became "dry," the result was not free from suspicious circumstances in that they all had had previous periods of varying duration, during which they had been "dry." In six other cases there was no effect noted from the Yankauer operation. It was

only fair, however, to add that these six cases had been selected cases in which no cure was to have been expected by anything short of the radical mastoid operation. The Yankauer operation is not a substitute for the radical mastoid operation, although from the reports, where ossicles were removed, the tympanum curetted, and the Eustachian tube closed, the speaker failed to see wherein the Yankauer operation, as now advocated, left the patient in any different status than he would be were a limited Stacke operation performed, leaving out of account the mechanics of the two procedures. It was interesting to listen to Dr. Yankauer's advocacy of closing the tube, and Dr. Holmes's of keeping the tube open, in similar groups of cases, and both reporting cures.

Dr. FRANK ALLPORT (Chicago) considered the Yankauer procedure another effort to evade the performance of the radical mastoid operation. Several operations have held out hope along these lines, but so far experience and time have demonstrated their uselessness. None will ever forget the extravagant praises which were sung for the ossiclectomy operation. Most have tried it, and have been bitterly disappointed, inasmuch as most of these operations have returned to the surgeon for the performance of the radical mastoid operation. Then the Heath procedure, known by its various names, which is, in reality, only a modification of the Schwartz operation, had its advocates, and has some advocates even now; but certainly it must be admitted that, at least outside of Dr. Heath's hospital, this operation has fallen very far short of giving the satisfaction which was hoped for it. Most of these cases have likewise returned for the radical mastoid operation. Now the Yankauer operation is presented, and what will be the consensus of opinion after the lapse of a year or two? At all events it should be tried by those who are willing to experiment in new and untried procedures, and after a while the Yankauer operation will find its proper niche and we will no longer have to question as to its wisdom and usefulness. Personally, however, the speaker thought that it will be only in an extremely few cases where this operation will be shown to be a suitable substitute for the radical mastoid operation. Dr. Yankauer had freely admitted that many cases are not cured by his method, and that a certain percentage still have a discharge; and the speaker felt that as long as there is any discharge whatever, something is wrong, and if this discharge persists that the patient will probably have to submit ultimately to a radical mastoid operation. Dr. McCullagh stated that many cases will not be cured by the closure of the tube alone, but that in addition to this an ossiclectomy has to be performed. The speaker therefore asked Dr. McCullagh how much advantage in such cases the method under discussion possessed over the Heath or the modified Schwartz operation? There is no danger in the Heath or the modified Schwartz operation, and if the case gets along well the ossicles are not removed and the hearing is conserved. Where it is necessary to remove the ossicles, it would seem as if the Heath or the modified Schwartz operation would be better than the Yankauer procedure, plus the removal of the ossicles. All of these operations undoubtedly do some good, but after all the radical mastoid operation is the only bulwark upon which we can confidently rest.

Dr. McCULLAGH, in reply, referred to Dr. Kopetzky's remark concerning the facilitating of a cure by keeping the tube open, as suggested by Dr. Holmes, and said he did not consider that a drum membrane with a perforation approaches the normal. He reiterated the statement made in his paper that the method under discussion saves a percentage of

cases from the radical mastoid operation. What that percentage is he could not say, but no matter what it is, it is a gain in the conservative surgery of this condition. The operation is so slight that it is really not an operation from the patient's point of view. In the event of failure, the radical operation can be employed. The operation is intended for chronic cases, where the ossicles are more or less disturbed, and where they have no effect at all upon the hearing. The object of removing the ossicles is solely for the purpose of getting freer drainage and obtaining surgical cleanliness in the cavity.

Eighteenth Annual Meeting, May 13, 14, and 15, 1912; Philadelphia, Pa.

May 13.

The Röntgen Rays as an Aid to the Diagnosis of Diseases of the Sphenoidal Sinus.—**Ross Hall Skillern and George E. Pfahler** (Philadelphia, Pa.).—The diagnosis of sphenoidal disease at best is not an easy matter, and often requires repeated examination before a purulent secretion can be traced to its origin. General symptoms may be marked and the local symptoms may be mild or entirely absent. Resection of one or both turbinates is often necessary before the sphenoidal wall becomes accessible to inspection and subsequent instrumentation. The Röntgen rays have proved of definite diagnostic value. From a rhinologist's point of view the important facts elicited are as follows: (1) The difference in the shadow intensity of the two sides; (2) whether the shadow or abnormal opacity also involves the posterior ethmoid cells; (3) the size of the sphenoidal sinus; (4) the distance between the anterior wall and the vestibulum naris; (5) the shape of the sphenoidal sinus, with special reference to the posterior (cerebral) and the lateral wall. The first and second are of importance for diagnosis, and the third, fourth, and fifth for operative purposes. Examinations should be complete, and this involves a study of the other accessory sinuses as well. From four to six or more exposures are required—at least two postero-anterior and one lateral are essential. This is then made more complete by making two lateral stereoscopically and adding two oblique. In exceptional cases a vertical or antero-posterior view is needed. Not only are the rays useful in diagnosing catarrhal and purulent disease of the sphenoidal sinuses, but valuable information will be obtained also in demonstrating the extent of new growths, and thus a complete operation can be done when advisable, or a meddlesome operation may be avoided. Much depends upon the making of good negatives, but more upon skilful interpretations.

Dr. JOSEPH C. BECK (Chicago) considered the oblique method a valuable one. He asked whether the skull with all the structures in place had eyeballs in it. If so, this would make a difference in throwing the shadow and might modify the diagnosis. In connection with the six exposures in one case he referred to a case which proved to be a malignant growth. Three pictures were taken, two of which were of no account and the last good. There was a falling of the hair after three exposures. He had found X-ray pictures of the sphenoidal sinus of very little value.

Dr. GEORGE L. RICHARDS (Fall River, Mass.) asked if patients subjected to negative pressure for diagnostic purposes complained of the procedure. He had employed an apparatus obtained in Heidelberg, and had found that patients objected very decidedly to more than one or two attempts.

Dr. GEORGE F. COTT (Buffalo, N.Y.), called attention to the possible absence of the sphenoidal sinus, and asked if this was common.

Dr. JOHN W. MURPHY (Cincinnati) said his patients had complained severely of the negative pressure, and that after a number of such complaints he had tried the method on himself. It felt as if the ear drums were being torn out. After this experiment he had abandoned the method.

Dr. GEORGE F. KEIPER (Lafayette, Ind.) recommended the Holmes apparatus for finding the sphenoidal opening. He suggested outlining the sphenoidal sinus by means of bismuth paste injected with an instrument something like Andrews'. The paste comes out of itself. He asked if the X ray was of value in diagnosing conditions of the hypophysis, as these are intimately associated with the sphenoidal sinus.

Dr. EDGAR M. HOLMES (Boston) held that in suppurative sphenoidal sinusitis the ostium of the sinus cannot be seen in some cases by any method. In perhaps 40 or 50 per cent. of cases, however, it can be seen by means of the naso-pharyngoscope, and its capacity measured. He had presented a number of cases in which, with a small syringe, he had been able to insert the tube, and with the naso-pharyngoscope in place, to syringe out the sinus. In some cases in which the X ray showed nothing, flakes of pus would be found in the fluid from the syringe. With the naso-pharyngoscope, and with the instrument carried as far towards the septum as possible, and slightly elevated, the eye of the instrument would be so placed that the sphenoidal ostium could be seen. The mucous membrane about the ostium of the sinus presents a different appearance when it has been bathed in pus for any length of time. He considered that seeing pus discharging from, or washed from, the sinus through the ostium was the surest method for determining the presence of a suppurative sphenoidal sinus.

Dr. ROBERT LEVY (Denver, Colorado) said that case after case might be cited in which the clinical manifestations vary and often contradict the X-ray findings so that one hardly knows how to proceed. In many cases the symptoms indicating operation were urgent. He did not hesitate to explore the sphenoidal sinus by an exploratory operation in any doubtful case. The X ray was of much more value in determining size, shape and position of the sinus than for diagnosing a diseased condition, and was always to be used prior to exploratory puncture.

Dr. JOHN M. INGERSOLL (Cleveland, Ohio), said the sphenoidal sinus could be punctured with a straight trocar in many cases in the same way that an experimental puncture is made in the maxillary sinus. It was a simple procedure, and could be done without the removal of any tissue, and without leaving a permanent opening.

Dr. SKILLERN, in reply, said with reference to negative pressure and the suction apparatus, that he was by no means a firm believer in this method as a method of treatment. It was of value in some cases in which the ostium was not visible, and in which negative pressure would bring out fluid. He employed it merely for purposes of substantiating the diagnosis, and not for treatment. Referring to Dr. Keiper's suggestion concerning the injection of bismuth paste, he thought it difficult enough to pass a tube, and injecting the sinus would be practically impossible for him. Of course, after an exploratory operation with removal of a portion of the anterior wall, it would be easier. Hirsch, of Vienna, had employed the X ray in order to ascertain the boundaries of the hypophysis, and had found it of great value. The cannula-probe for washing out the sinus was useful when a positive diagnosis had been made; in doubtful cases it was of no diagnostic value, inasmuch as the

pus becomes so disseminated throughout the fluid that not a trace of it can be found. Furthermore, the pus might be caught in the interstices of the ethmoid before the fluid reaches the anterior nares. He had never experienced the difficulty, suggested by Dr. Levy, in getting into the sinus. For this purpose he had found the curette just as satisfactory as the burr advocated by Dr. Grayson.

Dr. PFAHLER, in reply, said the diagnosis could be made in the majority of cases, with two exposures, the lateral and the postero-anterior. The repetition of the exposure was a matter of no moment, as all exposures were made from different directions and over different spaces, all being made in from five to eight seconds, or even less. There was a loss of hair in one case examined by him six years ago, three thirty-seconds' exposures being made. The oblique view was of importance only in confirmation of others, but was not of most value for diagnostic purposes. In the injected skull shown all the tissues, including the eyes, were in place. The disease could be outlined very accurately by means of the X ray. He considered the injection of the sinuses very objectionable because it covered up everything that it was desired to find out. Tumours could be outlined by the X rays so that in operating the surgeon could go entirely around the growth. The absence of the sphenoidal sinus could also be determined by the X ray. In such cases there could be seen sharp outlines, which could not be noted in impacted sinuses.

The Capacity and Superficial Area of the Sphenoidal, Maxillary and Frontal Sinuses.—HANAU W. LOEB (St. Louis, Mo.).—The work represented by the paper followed a study of the anatomy of the accessory sinuses of the nose from the standpoint of their greatest diameters—antero-posterior, supero-inferior and lateral. It was based upon a method described before the Third International Congress at Berlin, in 1911. A complete plaster cast of a sinus was made by uniting plaster moulds of those portions of a given sinus lying adjacent to one or another in serial sections of the head. These portions were readily removed without injury to the specimen. The cubical capacity could be easily ascertained by determining the amount of water displaced by the cast. The superficial area of the sinuses presented a more difficult problem. The plan devised consisted in covering the cast with strips taken from a known quantity of adhesive plaster, filled accurately without stretching. Subtracting the amount remaining from the known quantity gave the superficial area of the sinuss in question. The sphenoidal sinus was found to present marked variations in shape and size. The average cubical capacity of the right side was 5.25 c.c., and of the left, 4.61 c.c. The average of all the sinuses was 4.93 cc. The average superficial area of the right sinus was 16.99 sq. cm.; of the left, 14.92 sq. cm. The average of all the sinuses was 15.92 sq. cm. The maxillary sinuses were found to have an average cubical capacity of 13.02 c.c. on the right side and 12.85 c.c. on the left. General average, 12.94 c.c. The superficial area was 32.91 sq. cm. on the right, 32.43 sq. cm. on the left, and the general average, 31.68 sq. cm. The frontal sinus was found to have an average cubical capacity of 3.42 on the right side, 3.74 c.c. on the left, and a general average of 3.58 c.c. The average superficial area was 14.50 sq. cm. on the right side, 16.17 sq. cm. on the left, and the general average 15.34 sq. cm. In selecting the sinuses for measurement no attempt was made to group them so as to determine the total cubical capacity and superficial area of the sinuses on the right and left sides. Some interesting facts might be brought out by such an investigation.

Sphenoidal Sinusitis in Relation to Optic Neuritis.—**Joseph P. Tunis** (Philadelphia, Pa.)—After calling attention to some anatomical variations of the parts involved, from a study of over 500 wet preparations, the author gave the histories and autopsy records of nine cases. In case No. 9, sections of the optic nerve on the affected side showed decided evidence of superficial neuritis. His conclusions are as follows: (1) Anatomically the posterior ethmoidal and the sphenoidal cells have practically the same intimate relations with the optic nerve. (2) The larger the sinuses the less the danger of infection from near-by inflammations. (3) Infection of the optic tract by a spreading of sphenoidal or posterior ethmoidal sinusitis is due more to continuity and proximity than to any peculiar arrangement of the lymphatic system in this region. (4) Sphenoidal sinusitis may occur independently and unassociated with ethmoiditis or frontal sinusitis. (5) In a series of examinations of the accessory sinuses of 100 cases after death, tuberculosis was noted in the mucous membrane of only one case. This was of a diffuse and not very definite variety.

Dr. WILLIAM H. HASKIN (New York City) presented a number of bones showing the relationship of the different sinuses. The specimens demonstrated the variability of the sinuses in point of number, size and relationship to other structures, also the variability of the optic nerve, and of the size and position of the ostium.

The Wassermann Reaction and Salvarsan in the Treatment of Syphilis in Oto-Laryngology.—**Joseph C. Beck** (Chicago, Ill).—The Wassermann reaction should be as much a routine practice in diagnosis as urine analysis or differential blood-count. The original Wassermann reaction is generally considered the most reliable. It is usually positive in the early stages of syphilis, but not earlier than about six weeks from the development of the initial lesion; in the secondary stage, in 100 per cent.; in tertiary lues, 75 to 100 per cent.; and in latent lues, within four years, about 50 to 75 per cent., after that only 30 to 50 per cent. The positive Wassermann reaction is diagnostic of syphilis, since in other conditions (recurrent fever, leprosy, measles, scarlet fever, pneumonia, frambæsia, malaria, lead poisoning, tumours and cachexia) in which it occurs an entirely different clinical picture is present, especially in ear, nose and throat affections. It is different, however, in cases of a mildly positive or negative Wassermann reaction. Here all the clinical features are present, but the serological examination is negative. This is ascribed to the mercury-fast spirochaetes or to the quiescent period of these organisms. Only after a longer period of rest from mercury and after a repetition of the introduction of this drug or salvarsan would the Wassermann reaction become strongly positive. Writers differ as to the time-limit when a patient might be considered cured. Recurrences in the nervous system may occur three years after thorough treatment, the Wassermann reaction being negative and all clinical phenomena of the disease absent during the interim. After three years, according to some, in the presence of a negative Wassermann, the patient may be considered cured. Others recognise no time-limit. The luetin reaction of Noguchi, which is analogous to the skin reaction of tuberculosis, is especially adapted to the latent stages of syphilis; it is also absolutely negative in healthy persons and in cured syphilitics. When the skin reaction does not occur and the Wassermann is also negative, after the patient has been treated, he may be considered cured,

regardless of time. In some cases, notably those in which the spirochaetes are located in structures that are penetrated with difficulty by either mercury or salvarsan (cerebro-spinal system, nerves, cornea), the Wassermann reaction may remain positive for a long time, despite anti-luetic treatment.

Salvarsan in oto-laryngology has proved of great value. The speaker gave the following indications and contra-indications for its use:

Indications.—(1) Malignant or grave lues. (2) Lues in which there exists an idiosyncrasy for mercury. (3) Lues that is very refractory to mercury. (4) In cases where for prophylactic reasons a rapid sterilisation is necessary. (5) Recurrences or so-called complications from the nervous system. (6) In luetic patients who are also infected with tuberculosis, and who, as a rule, tolerate mercury badly. (7) In cases where, in spite of a very vigorous and long-continued mercury treatment, the Wassermann reaction remains positive. (8) As a diagnostic measure it is far superior in time to mercury.

Contra-indications.—(1) In ocular diseases in which there had been employed some of the other arsenical preparations, as hekin, enesol, arsacetin, or atoxyl, one must not employ salvarsan. In no ocular disease, especially those of luetic origin, is there any contra-indication for its use. (2) In heart diseases and aortic aneurysm great care should be exercised, and only the smallest doses should be administered if at all. In cases of heart failure complicated by nephritis, tabes, general paresis, it is, according to Ehrlich, contra-indicated. (3) Kidneys: acute nephritis, except the luetic type, is an absolute contra-indication. (4) Gastro-intestinal: ulcerative conditions of stomach and duodenum, owing to the possibility of rupture. (5) Liver: acute swelling or chronic cirrhotic or atrophic livers prove very dangerous conditions, since here is the main depôt for the salvarsan. (6) General nervous system: In all cases of marked progressive degenerative changes, especially where arteriosclerosis is present. In cases where a typical Herxheimer reaction takes place, and where the danger zone of the centres becomes affected by this reaction. (7) Diabetes and general marked obesity, in consequence of general alcoholism, are very dangerous conditions in which to employ salvarsan, on account of the fatty heart.

Among the complications, immediate and remote, following the use of salvarsan, otologists are particularly interested in the neuro-recurrence, otherwise spoken of as injury to the auditory nerve. Bernario collected from the literature 220 cases of nerve affections following the injection of salvarsan. Of all the luetic recurrences in the nerves he found the auditory to predominate, representing 44.5 per cent. Valentine, in a recent review of the subject of the auditory nerve affections following salvarsan, classified the cases into two groups: (1) Acoustic affections alone; (2) acoustic affections with other nerves. The acoustic nerve affections were classified as: (a) Cochlearis (nine cases); (b) vestibularis (seven cases); (c) cochlearis and vestibularis (twenty cases combined of both portions, and in nine other cranial nerves were involved. Other authors have expressed the belief that no permanent injury to the auditory nerve occurs following the use of salvarsan.

The author reported a personal experience of forty-seven cases of syphilis involving the ear, nose and throat, treated by salvarsan. The Wassermann test was strongly positive in all the cases. Twenty-eight patients are now well so far as repeated Wassermann tests show, and clinically the forty-seven cases are well. The majority were treated by the intra-venous method, the majority having more than one injection.

In no case was there trouble with the ears following the injection except a ringing in the ears, which disappeared in a day or two.

Dr. GEORGE F. COTT (Buffalo, N.Y.) asked if salvarsan could be injected intra-venously in every case. He believed it could not. When a rapid effect was desired the intra-venous method was to be preferred; when a slow effect was desired this was not the case. He cited a case, of eight years' standing, in which a tubercular syphilide covered the soft palate and extended to the hard palate, successfully treated by intra-muscular injection. In certain cases it was almost impossible to introduce the needle into the vein. The fluid, when injected, leaked through, or the needle passed beyond the vein, it being so brittle. He cited another case in which attempts were made in several different parts of the same vein, without success, and intra-muscular injection was finally made. The only objection to the latter method was that occasionally the drug is deposited in the muscle, where it remains, causing induration.

Dr. F. C. ARD (Plainfield, N.J.) emphasised the importance of keeping salvarsan patients under observation for months after the treatment.

Dr. BECK, in reply, suggested, with reference to the difficulty in finding the vein, not having the Esmarch bandage too tight. It was not necessary to expose the vein. Salvarsan did not penetrate the sheath of the nerve, and the spirochæte had a tendency to fix themselves there and to become immune to the action of salvarsan.

Radiographs of the Mastoid Process, showing Normal and Pathological Conditions.—Dr. Wendell C. Phillips (New York City).

Dr. FREDERICK M. LAW (New York City) said the angles vary in all cases, so that it was difficult to state a definite point, but in the average case, with the tube carriage tilted forward fifteen degrees and upward about ten degrees, the mastoid is thrown away from the interfering shadows of the base of the skull. The exposure was two seconds. The difficulty with mastoid work was that two exposures were made, one for each side, and unless these exposures were the same and the development the same there would be a lack of uniformity in the shadows. These points must be considered in interpreting the negatives. In a case with a chronic discharge of the ear on both sides, with acute mastoid symptoms on one side, the shadows of the two mastoids would be very similar. The only exception to this was in the case of sclerotic bone, which would show a granular condition similar to the texture of the bone surrounding the mastoid, whereas pus or necrosis shows as a smooth white shadow.

Dr. JOSEPH C. BECK (Chicago) said his experience in mastoid work had led him to conclude that too much dependence should not be placed upon the diagnosis of mastoid disease by means of radiographs. Granulation of bone, for example, showed very fine on the X-ray plate, and might be misleading. The X ray would show that the mastoid is involved, and would outline it. It would also differentiate between sclerosis of the mastoid process and the normal diploic mastoid, the former showing a more diffuse outline on the plate.

(To be continued.)

Abstracts.

LARYNX.

Killian, G. (Berlin).—Suspension Laryngoscopy. "Archiv. für Laryngol.," vol. xxvi, Part II.

Prof. Killian has been engaged for a period of over two years in perfecting this new method of laryngeal examination. He describes in this important paper the process of development through which the instruments employed have passed before reaching their present form. His attention was first directed to the matter in the winter of 1909-10, when he attempted, using a Kirstein spatula, to provide for his artist a good view of the hypopharynx and interior of the larynx of a *post-mortem* room body. It was then found that if, after introduction of the spatula, its handle were slung from a cross-bar fixed by uprights above the table, the head could be suspended free of the table, and a very good direct view of the pharynx and larynx obtained. It appeared to the author that a similar method might be applicable to the living, and he has since then devoted much time and thought to overcoming the numerous minor difficulties which presented themselves. The principal advantages of the method seem to be that in suitable cases a very good direct view of the pharynx, hypopharynx and larynx (excepting as a rule the anterior commissure) is secured, and that, once the instrument is introduced and the patient fixed in position, this view is obtained without any effort on the part of the examiner, who has, in addition, both hands free and is therefore able to carry out with comparative ease the most delicate operative procedures.

Apart from numerous experimental trials the author has employed the method in about fifty cases mainly of laryngeal tuberculosis as well as a few of papilloma of the larynx. By its means he has been able with great ease to very thoroughly curette ulcers and remove infiltrations or treat them with galvano-caustic puncture. He finds it best in a majority of the cases to employ the semi-anæsthesia produced by scopolamine-morphine injection, and this gave rise to no untoward effect even on consumptives in the third stage of the disease. Only occasionally is a light chloroform anæsthesia required in addition.

Thomas Guthrie.

NOSE.

Gore, W. Ringrose.—Caries of Frontal Bone and Intra-Cranial Abscess due to *Bacillus Typhosus* eleven years after attack of Typhoid Fever. "Proc. Roy. Soc. Med.," December, 1911 (Surgical Section).

The patient contracted typhoid in South Africa in 1900. He had been inoculated on board ship five months previously. The attack of typhoid was a very severe one and patient was unconscious for five weeks. Five years ago he was found to have albuminuria and a year later an abscess formed in the right femur, probably due to the *Bacillus typhosus*. A year ago patient had his appendix removed. Last winter he had three attacks, each of a week's duration, during which there were headaches, rigors, profuse sweating, and a temperature of 105° F. Mr. Gore found a small swelling in the scalp over the frontal bone in the middle line, and on puncture withdrew pus which yielded a pure culture of the typhoid

bacillus. The abscess was opened and found to be intra-cranial and extra-dural in origin, there being a hole about the size of a sixpence in the frontal bone. It is suggested that in this case the habitat of the bacillus was the interior of the gall-bladder. The case is being treated by vaccine therapy.

J. S. Fraser.

Polyak, L. (Budapest).—Simultaneous Bilateral Nasal Operations, and their After-treatment. "Zeitschr. f. Laryngol.," Bd. iv, Heft 3.

This paper is concerned not only with resection of the inferior and middle turbinals, but also with endo-nasal operation on the ethmoidal maxillary, sphenoidal and frontal sinuses.

Polyak's dictum is as follows: "No operations on out-patients and no nasal plugging if it can be avoided." Of his last 220 nasal operations 331 were bilateral. With regard to bleeding, in 80 per cent. of the cases there was no real hæmorrhage; in 15 per cent. a spray of supral-renal gland extract was sufficient; 5 per cent. of cases required anterior or posterior plugging. The writer calls attention to rubber sponge-tissue, and also to thin rubber bags, which are inflated after insertion in the nasal cavity. He disinfects the patient's face before operation with iodobenzine 1:1000, and covers the head and face of the patient with a sterile mask.

J. S. Fraser.

Spiess, Gustav.—A Tumour of the Pituitary Region Successfully Removed via the Endonasal Route. "Münch. med. Wochenschr.," November 21, 1911, p. 2503.

The patient had suffered for three months from dull pain in the interior of the head and increasing blurring of sight with diminution of the field of vision (of the character of a bitemporal hemianopsia). The Wassermann reaction was negative, whilst the tuberculin reaction was positive. In the absence of other than the above-mentioned symptoms it was assumed that the hypophysis cerebri itself was not involved, but that the lesion was in its immediate neighbourhood, and this received corroboration from an X-ray photograph, which suggested an enlargement of the sella turcica in a downward and forward direction into the sphenoidal sinus. It was resolved to approach the sella turcica by the endonasal route as recommended by Hirsch of Vienna. Under local anaesthesia the septum nasi was resected (submucous) as far back as the anterior wall of the sphenoid, which was bared of its muco-periosteum and then removed along with the septum dividing the two sphenoidal sinuses. A good view of the interior of the sphenoid was thus obtained, and it was then seen that, in place of the posterior bony wall of the sphenoid, there was a somewhat tense, smooth membrane of a whitish colour, and on probing suggesting the wall of a cyst. After an interval of two days an endeavour was made to shell out what was believed to be a cyst by making a cross-incision through the tense white membrane (dura mater) forming the posterior boundary of the sphenoidal cavity. This was not possible, so the cyst was opened and emptied of masses of tenacious mucus and its wall carefully removed by means of a sharp spoon. The size of the cyst was found to be about that of a hazel nut. The ultimate result was most gratifying: the headache entirely ceased, and the visual acuity, as also the field of vision, returned to normal within seventeen days.

Prof. Fischer, who examined the tissues removed, reported that it was an extremely rare form of tumour having its origin from the notochord.

J. Stoddart Barr.

NOSE AND NASO-PHARYNX.

Citelli, Prof. (Catania).—Ten Cases of Primary Malignant Tumour of the Naso-Pharynx (Four Sarcomata, Five Carcinomata, and One Endothelioma). "Zeitschr. f. Laryngol.," Bd. iv, Heft, 3.

These ten cases have been observed by Citelli in nine years.

Sarcoma.—Case 1 was a typical lympho-sarcoma. Male, aged fifty, suffered from noisy breathing and toneless voice. Left side of the neck swollen and the patient suffered from epistaxis. The left side of the nose was blocked and the patient also complained of difficulty in swallowing and breathing. On examination the naso-pharynx was filled by a red, fleshy growth which extended into the oro-pharynx and pushed forwards the soft palate. The tumour did not extend into the nose, but gave rise to Eustachian obstruction. Microscopic examination showed that the tumour was covered partly by cylindrical and partly by squamous epithelium, and that the ground work consisted of lymphocytes without lymph-follicle formation. The patient was treated with arsenic. Later on the neck became greatly swollen and the patient suffered from laryngeal obstruction and difficulty in swallowing. Tracheotomy was refused and the patient died of asphyxia. Case 2 was similar, but it is interesting to note that the enlarged cervical glands had already been operated on by a general surgeon who had missed the nasal tumour altogether. In this case also the symptoms of Eustachian obstruction were present. Case 3, male, aged forty-nine, suffered from pain in the right ear for six months. As in the first two cases there was no intra-nasal extension of the growth. The Eustachian tube was obstructed. Case 4, male, aged forty-five, was one of round-celled sarcoma. The tumour had a more smooth surface than in the preceding three cases, which were lymphosarcomata. Case 4 had no enlargement of the cervical glands. Citelli gives notes of a specific case in this connection in which the symptoms were similar to those just described, but in which anti-syphilitic treatment brought about a cure. Even the enlarged cervical glands cleared up under mercury and iodide.

Carcinoma.—Four out of the five cases began in the lateral wall of the naso-pharynx behind the tubal orifice; the symptoms were those of tubal stenosis and otalgia. In three cases the growth arose from the surface epithelium and in two from the glands. There appears to be a long latent period in carcinoma cases, but the first symptoms are pain shooting to the ears and the hawking back into the mouth of blood-stained mucus. Closure of the Eustachian tube is present and is followed later by nasal obstruction. Thereafter ulceration soon occurs and gives rise to a foul odour of the breath. A careful examination of the naso-pharynx by posterior rhinoscopy and by palpation is very necessary. In the second period the pain and nasal obstruction become greater; the ulceration and foul odour of the breath increase and the cervical glands become enlarged; deglutition and phonation are interfered with. In the third stage the base of the skull is affected and there may be paralysis of cranial nerves.

Endothelioma.—The patient was a woman, aged forty-five, who complained of noises in the right ear and of a certain amount of deafness. The case was sent to Citelli by a colleague, who had diagnosed Eustachian obstruction, and on using the catheter had caused a considerable amount of bleeding. From that time the patient began to complain of lancinating pains over the corresponding side of the head. Later on a tender swelling formed in the upper part of the parotid region. On otoscopic

examination there was only slight retraction of the tympanic membrane. After application of cocaine and adrenalin Citelli observed a diffuse tumour in the right fornix of the naso-pharynx; the swelling had a reddish colour and a regular surface.

J. S. Fraser.

EAR.

Urbantschitsch, Victor.—“Hyperacusis Willisii.” “Monats. f. Ohrenh.” Year 46, No. 6.

The author has been continuing his researches into the conditions which regulate this phenomenon, and here relates the results of his examination of some forty patients in this respect. The voice, tuning-fork and watch were used for estimating the duration of bone-conduction and range of perception *vis à* air, details of the methods used being described.

As a stimulus to the production of the phenomenon the tuning-fork was used either *vis à* the bone or air and also Bárány's noise apparatus.

From his investigations he concludes that “hyperacusis” can be demonstrated in those with normal hearing, in cases of both catarrhal and purulent affections of the conducting apparatus, in cases where the malleus and incus are absent and even in disease of the cochlear nerve (in addition presumably to oto-sclerotic conditions).

Similar accentuation of perception can be shown in relation to other senses, especially that of vision, as he has elsewhere pointed out. Shaking the head or whole body was found to produce an increase in the hearing which would correspond to the temporary improvement in some cases whilst travelling by rail, and during the application of vibratory massage. This latter fact would appear to suggest that the increased perception thus produced is dependent on an increased mobility in the sound-conducting apparatus and is thus of a physical nature. Urbantschitsch, however, considers there is good reason to regard the improvement as due to a stimulation of the sense of perception only.

Alex. R. Tweedie.

Bruehl, Gustav.—Notes on Pathology of the Ear. “Laryngoscope,” October, 1911.

(1) Gummatous invasion of the mastoid process: A pathological specimen without any clinical history shows an excavation of the mastoid process down to, and exposing, the sinus groove. The loss of bone is most marked on the inner surface of the mastoid process and the antrum is not exposed. The surrounding bone shows a marked formation of osteophytes. The author suggests that this condition is similar to one observed by him clinically in which a man, thirteen years after syphilitic infection, while under observation for nerve-deafness with a normal drum, developed a fluctuating tumour the size of a hen's egg over the mastoid process combined with facial paralysis and ataxia. After fourteen days' anti-specific treatment the tumour and facial paralysis had disappeared but complete nerve-deafness persisted.

(2) A specimen of an adult temporal bone, showing complete petro-squamosal squamo-mastoid sutures so that the bone is divided into two independent parts: There are a few small cells developed in the portion of the squamosal covering the mastoid.

(3) Two specimens of atresia of the meatus: The first, of which the history is unknown, shows an occlusion of the bony external meatus by a broad, thin, bony lamina arising from the posterior wall and leaving two

small apertures above and below it about $1\frac{1}{2}$ millimetres in diameter. This lamina is probably the result of ossification of granulations due to an external otitis. There are no apparent deep-seated changes.

The other specimen, a left temporal bone, was removed from a female, aged eighty, whose meatus was seen during life to be occluded by an epithelial covered membrane. The ear was totally deaf, and from examination of the specimen the occlusion is seen to be due to an atrophic epidermal layer lying on, and continuous with, some fatty connective tissue which occupied the site of the middle ear and could be seen passing deeply into the situation of the vestibule, which was disorganised. No trace remained of the semicircular canals and the mastoid cells were full of solid connective tissue. The cochlea was much disorganised, the spiral ganglion being the only remnant of normal structure, the basal coil being filled with new bone and the remainder with fibrous tissue. The bony new formation seems to have arisen from the endosteum of the labyrinth. The specimen probably demonstrates the spontaneous recovery of a suppurative labyrinthitis.

A. J. Wright.

PHARYNX AND ŒSOPHAGUS.

Gastinel, P., and Pelissier, Andre (Paris).—Syphilis, Diphtheritic Paralysis, Palatine Herpes. "Gaz. des Hop.," October 5, 1911.

The authors remark that ulcero-vesicular eruptions are recognised facts and generally involve no difficulty in diagnosis. There are, however, cases where such conditions occur in subjects of infection, apart from neuritis, and then it is a delicate matter to discriminate between trophic phenomena and what may be due to infection. The following case affords an example. In August, 1910, a woman had a vulvar chancre which had never been treated. In October of the same year she had diphtheria and was treated with Roux's serum. Paralysis of the soft palate ensued and lasted three weeks. At the end of November small vesicles appeared on the velum, which ulcerated and shortly cicatrised, but reappeared some days afterwards. Similar recurrences took place six times in two months. The patient's attention was only drawn to them by slight dysphagia. When seen in January there was a diffuse redness of the entire pharynx and velum. On the latter, and quite limited to its posterior part, a crop of vesicles was observed, some pearly, others had burst. They extended on to the anterior pillar of the fauces, but respected the tonsils, posterior pharyngeal wall, cheeks and tongue. The eruption was unaccompanied by fever, headache or functional symptoms, except slight dysphagia. There was no spontaneous pain. Paralysis of the palate had disappeared and its sensibility was intact. At this time the patient manifested secondary syphilitic symptoms. The trunk and limbs were covered with a maculo-papular rash, and hypertrophic mucous plaques were present on the vulva. There were no mucous patches on the lips, tongue or pharynx. Some days afterwards the vesicles had completely disappeared, giving place to polycyclic erosions. The pharynx was red, but no lesions were present. The syphilides had the same distribution and always respected the bucco-pharyngeal cavity. The nature of this herpetiform eruption occurring in a syphilitic subject, on a territory previously attacked by neuritis, and also the relation which the specific infection and nerve lesion may have had to the eruption, are fully discussed.

H. Clayton Fox.

REVIEW.

The Nature and Causes of Catarrhal "Throat" or Hereditary Deafness. An Explanation of Paracusis Willisii. The Mechanism of Aural Accommodation. The Regulation of Labyrinthine Fluid Pressure. The Tightening of Relaxed Tympanic Membranes and Joints. The Relief of Tinnitus Aurium. With a Description of a New Method of Treatment and some Illustrative Cases. An Address delivered before the West Kent Medico-Chirurgical Society at the Miller Hospital, Greenwich, March 4th, 1910. (Revised and amplified by the addition of numerous Explanatory Notes.) By CHAS. J. HEATH, F.R.C.S. May, 1912. Pp. 132.

Mr. Charles Heath's pamphlet on paracusis consists of three parts: (1) A lecture delivered before the West Kent Medico-Chirurgical Society; (2) a series of foot-notes appended to that lecture; and (3) a second series of foot-notes appended to the first series, an arrangement which is rather distracting to the attention, the distraction not being lessened by the fact that the author has been unable to resist the temptation to give us his views upon many other subjects besides paracusis Willisii.

It is, however, to his central theme alone—paracusis Willisii—that we propose to address ourselves. Mr. Heath deals with its causation and also with the deafness accompanying it—what he calls "paracitic deafness"—boldly sweeping aside both the theories and the observations of his predecessors in order to make room for his own. As to what his own explanation of paracusis may be, here it is, briefly summarised:

The annular ligament of the foot-plate of the stapes (if that is what Mr. Heath means by "the membrane of the oval window") becomes flaccid as a consequence of (*a*) atrophic changes in the middle ear, or (*b*) unopposed contraction of the stapedius from loosening of the malleo-incudal articulation, whereby the tensor tympani ceases to oppose the stapedius, or (*c*) a combination of (*a*) and (*b*). The stapedial ligament being thus relaxed, the structures in the oval window have their tension and consequently their conductivity for sound-waves reduced, and the patient manifests deafness. In a noise some of the sound-waves are sufficiently ample to traverse the flaccid structures. The perception of these sounds induces reflex contraction of the stapedius; this puts the structures in the oval window on the stretch, enhances their conductivity, and so enables them to transmit sound-waves of a lesser amplitude. Thus the patient hears better in a noise.

In a foot-note to p. 110 we read that "A well-known physiologist and F.R.S., author of a text-book, and formerly professor of physiology at a British University with one of the largest medical schools in this country" has expressed the opinion that "Mr. Heath's explanation of paracusis seems to be unanswerable," and that "his paper would have delighted Helmholtz."

Greatly daring, and with every expression of respect for the well-known but anonymous physiologist, we venture to suggest that neither Mr. Heath's explanation of paracusis nor yet his paper is above criticism.

In proceeding to analyse Mr. Heath's views, let us first of all see in how far it is possible to agree with him. There is, for example, no question in our opinion as to the occasional existence of abnormal flaccidity or laxity of the tissues about the oval window. Thus far we feel ourselves on safe ground. But a belief in Mr. Heath's explanation necessitates much more than an admission of the occasional existence of a

loose stapes. It necessitates not only (a) that the flaccidity and the paracusis can be demonstrated to co-exist in a large number of cases, but also (b) that flaccidity does not exist without paracusis, nor paracusis without flaccidity.

How does Mr. Heath meet those requirements in this paper that "would have delighted Helmholtz"? In a foot-note to p. 53 he tells us that he once saw an extremely loose stapes in the oval window of a patient he was operating on. But, shade of Helmholtz! by some strange oversight he omits to say whether the patient had paracusis or not, and that is the only case reported in the pamphlet in which a loose stapes was demonstrated.

Nor is there any better attempt to prove by pathological investigation the second of the requirements we have just mentioned, namely, that flaccidity and paracusis are mutually inclusive.

Mr. Heath, however, undeterred by these omissions, substitutes for them a number of arguments which, if well established, would no doubt lend some aid to a struggling theory. The chief of these are three clinical circumstances, which we now proceed to examine a little in detail.

First, he states that in "paracutic" deafness, an improvement in hearing when the patient stoops is a sign of a relaxed oval window. What happens, according to Mr. Heath, is that stooping causes "some vascular congestion of the head, and consequently an increase of pressure on the cerebro-spinal fluid, which, communicating freely with the perilymph in the labyrinth" (p. 31), raises the pressure in that cavity, and so tightens the relaxed tissues about the oval window.

We shall waste no time on the explanation. What we have to do is to investigate the validity of the "fact" as it is set forth in the pamphlet.

Helmholtz, we imagine, would seek for some indication of the number of cases which had been found to manifest this phenomenon. He would, we think, ask whether it had ever been encountered in non-paracutic cases. Because, of course, the value and significance of the symptom would rest upon such simple considerations. If, for example, the symptom was as common and as marked in non-paracutic as in paracutic cases, or if in paracutic cases it was frequently absent, its meaning would naturally be less emphatic than Mr. Heath would have us believe. But the pamphlet is silent upon these points. Consequently it is impossible for us to estimate the significance of this phenomenon, unless, that is, we are willing to accept the value placed upon it by the author. He, as a matter of fact, has no doubt about it, for he calls it a "test"—the *passive congestion test*—as if it were of the same order of events as the reduction by dextrose of the salts of copper.

The same lack of essential data attends Mr. Heath's description of his second "test"—the *active congestion test*—which consists in examining the patient for improvement in hearing after muscular exercise, etc.

Lastly, Mr. Heath has devised a third "test"—the *muscular test*—for a flaccid foramen ovale. Utilising Lucae's observation with regard to the synchronous contraction of the orbicularis palpebrarum and the stapedius, Mr. Heath says that if the hearing improves during the contraction of these muscles a loose stapes is signified.

Here, again, when we search through Mr. Heath's pamphlet for a sufficient and convincing series of clinical data upon which a generalisation like this may be based, we search in vain. The total number of cases examined, the percentage responding positive or negative, and the behaviour of controls are not disclosed.

Such, then, *in petto*, is Mr. Heath's theory of paracusis Willisii together with the chief arguments he offers in its favour. The theory presents no inherent impossibility, and as a speculative exercise it is ingenious. But, as we have just shown, its structure is weakest where strength is most required, for such all-important matters as pathological findings, the evidence of methodical and painstaking clinical research, and the careful exclusion of other possibilities are either defective or altogether absent. Further, despite Mr. Heath's hasty assumption of the rarity of fixation of the stapes, the evidence of the presence of paracusis in otosclerosis is, of course, too firmly established to be spirited away by a mere *ipse dixit*.

Let us now turn to Mr. Heath's treatment of "paracutic deafness."

This consists in painting the membrana tympani with graduated solutions of cantharidin so as to induce an inflammation of that structure, and, it is hoped, a swelling and stiffening of the relaxed "membrane of the oval window."

We have no intention of discussing the rationale of this treatment. *A priori* reasoning in therapeutics is often but a waste of time. The important question is, What are its results? And for an answer we turn to Mr. Heath's cases as they are recorded in the pamphlet.

Nine are reported, eight in the text and one in a foot-note, in narratives impressive and dramatic. Unfortunately, when we come to analyse them we discover here the same poverty in essential detail which we found to invalidate the author's presentation of his theory of paracusis. The only hearing-test regularly reported is that for the watch. The patients are said to have been able to "hear a little" by means of an ear-trumpet (Case 4); or one ear was "useless," and the hearing in the other had "failed completely" (Case 3), and so on; but the actual measured hearing distances for the conversational voice and the whisper are not recorded. There are no systematic records of tuning-fork tests—of the hearing for high and low tones. The results obtained by the author from the use of the catheter and from Politzerisation are not reported. There are no regular records of the vestibular test. There is no indication that these methods of diagnosis and of estimation, methodically entrusted to a second observer, were always carefully carried out before, immediately after, and some months after the treatment had been practised. There is no evidence of the careful exclusion of functional deafness.

Finally, neither Mr. Heath, nor any of the correspondents he quotes as supporting him and pursuing his methods, give us any indication of the total number of cases of "paracutic deafness" treated in this way, with their percentage results. Nine imperfect case-histories do not, of course, settle the matter either one way or the other. The data, in short, are inadequate.

Dan McKenzie.

BOOKS RECEIVED.

De l'Enrouement chez les Chanteurs : Étude physio-pathologique de la voix Chantée. (Travail de la Clinique oto-rhino-laryngologique de la Faculté de Médecine de Bordeaux.) Par le Dr. Henri Larielle. Bordeaux : A. Destout Aîné & Cie, 1912.

Prescribers' Formulary and Index of Pharmacy. By Thomas Pugh Beddoes, M.B., B.C.Camb., F.R.C.S.Eng. London : Baillière, Tindall & Cox, 1912.

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THE OPERATIVE TREATMENT OF LABYRINTHINE VERTIGO IN NON-SUPPURATIVE DISEASE OF THE INTERNAL EAR.¹

BY WILLIAM MILLIGAN, M.D., M.S.,

Aurist and Laryngologist to the Royal Infirmary, Manchester; Surgeon to the
Manchester Ear Hospital; Lecturer upon Diseases of the Ear,
The Victoria University, Manchester.

MR. PRESIDENT AND GENTLEMEN,—The persistence of labyrinthine vertigo in spite of medicinal, dietetic, or hygienic treatment necessitates at times the performance of some form of surgical operation whose object is the destruction of the function of the affected portion of the internal ear.

The diagnosis of static lesions of the internal ear has, thanks to the epoch-making researches of Bárány, Neumann, Alexander and others, been so perfected as to make it now possible to undertake remedial measures of a surgical nature with definite hopes of a successful issue.

Vertigo may be due to:

- (1) *Central* lesions, *e. g.* amongst others disseminated sclerosis, locomotor ataxia, cerebellar growths, etc.
- (2) *Peripheral* lesions, *e. g.* lesions of the middle or internal ear or of both combined.

¹ A paper read before the International Otological Congress, Boston, U.S.A., August, 1912.

(3) *General* causes, *e. g.* amongst others renal or cardiac disease, rheumatism, arterio-sclerosis, auto-intoxications, neurasthenia, etc.

In the following remarks it is my intention to confine myself to the surgical treatment of intractable vertigo of peripheral origin, and more especially to that type of vertigo which is included in the symptom-complex known as pseudo-Menière's disease.

For practical purposes such cases may be grouped under two main classes :

(1) Cases in which vertiginous symptoms predominate and in which tinnitus is either absent or but little complained of.

(2) Cases in which vertigo is complicated by incessant and distressing tinnitus.

In *Class No. 1* operative interference should be limited to the removal of the static portions of the internal ear, in other words a "canaliculo-vestibulotomy" should be performed; whereas in *Class 2* the performance of a complete "bridge" operation or labyrinthectomy is indicated.

Surgical intervention should be limited to those cases which have failed to respond to prolonged general and local treatment, and to those in which from the circumstances of the patient it is necessary to secure a rapid destruction of an over-excited and irritable labyrinth as determined by the caloric and other tests.

The risks of a partial or complete labyrinthectomy, although slight, should not be neglected. First and foremost is the risk of sepsis. With careful preparation of the patient and of the operation area, careful technique, and the free use of antiseptics, the risks of sepsis and possible infection of the base of the brain should be reduced to a minimum.

Post-operative increase of deafness hardly requires consideration, as with an increase of irritative symptoms there is *pari passu* a progressive loss of hearing, in addition to which the amount of hearing at the time of the contemplated operation is, as a rule, so small as to be almost a negligible quantity.

In careful hands the risks of facial paralysis are not great provided that the field of operation is kept thoroughly well illuminated, that some form of labyrinth chisel (*e. g.* Lake's) is used to open the semi-circular canals and the cochlea, and that no attempt is made to lever out pieces of bone utilising the bony wall of the Fallopian aqueduct as a fulcrum. The destruction of the terminal filaments of the vestibular nerve should be as thorough as possible. I have found in actual practice that the more thoroughly the operation is performed the less the amount of post-operative

shock. For this reason I advocate the complete opening up of the external semi-circular canal and of the ampullary orifice of the posterior canal in order to effectually destroy the peripheral terminations of the vestibular nerve.

When tinnitus is not much complained of and when it is worth while attempting to preserve whatever auditory function is still left, operative interference should be limited to the opening up of the external semi-circular canal and vestibule after the performance of an ordinary Schwartze operation. In performing a Schwartze operation with this object in view the opening through the bone should be made as large as possible so as to freely expose the bony covering of the external semi-circular canal which lies at the bottom of the excavation.

No attempt should be made to open up the middle ear, nor should the soft parts of the external auditory meatus be in any way disturbed.

The external semi-circular canal should now be opened with Lake's chisels, and followed both forwards and backwards to the vestibule. Should difficulty be experienced in reaching the ampullary orifice of the posterior canal from the vestibule the canal should be opened farther back and followed forwards. A careful and very thorough curetting of the vestibule should now be made, followed by swabbing with some strong antiseptic. Healing is invariably rapid provided that there is no sepsis, and complete relief from vertigo should be secured in from five to six days. If vertigo persists longer the deduction is that the operation has not been thoroughly performed—in other words that the peripheral terminations of the vestibular nerve have not been thoroughly destroyed.

Where, on the other hand, intractable tinnitus complicates vertigo, a complete labyrinthectomy should be undertaken in the hopes that destruction of the peripheral terminations of the cochlear branch of the eighth nerve may cause its subsidence.

My experience has been, however, that it is much more difficult to cause a complete disappearance of the tinnitus than of the vertigo—a fact which makes me believe that in many cases it is of "central" origin.

The "bridge" operation which I advocate, and which consists in opening the vestibule both above and below the Fallopian aqueduct, is performed as follows :

A complete radical operation is first performed, special attention being directed to a thorough removal of the "facial spur."

The semi-circular canal system is then attacked by opening the *pars petrosa* in the space between the posterior arm of the external canal and the anterior arm of the posterior canal. By working forwards and backwards along the course of the external canal the vestibule is opened. The fossula rotunda is then enlarged and the bony wall of the cochlea between the fenestra rotunda and the fenestra ovalis along with the stapes removed, thus leaving the bony walls of the Fallopiian aqueduct standing out like the arch of a bridge (end on as it were) between the cochlea—vestibular system in front, and the canaliculo-vestibular system behind. Careful curetting is then performed and the cavity disinfected with some strong antiseptic solution.

For the relief of severe labyrinthine vertigo I have in two cases divided the eighth cranial nerve in the posterior fossa, in one case with a successful and in the other with a fatal result. In four cases I have limited the operation to the canaliculo-vestibular system (without interfering with the cochlea), with three complete cures and one case of partial relief; while in six other cases I have completely extirpated the labyrinth by means of my "bridge" operation with the following results: Four cures, one partial relief, and one failure.

Of the twelve cases, nine were males and three were females. The youngest patient was aged twenty-six, the eldest sixty-five.

In all of the cases prolonged local and medicinal treatment had been carefully carried out, but unfortunately without result.

The immediate reasons for operating were:

- (1) The failure of general and local treatment.
- (2) The risks run by the patient owing to the occurrence of sudden and severe attacks of vertigo.
- (3) The mental depression produced by forced inactivity.

THE TECHNIQUE OF REGIONAL ANÆSTHESIA IN RHINO-LARYNGOLOGY.

By DR. JULES BROECKHAERT.

(Translated by DAN MCKENZIE).¹

REGIONAL anæsthesia, which has been employed in oto-rhino-laryngology for but a short time, seems likely to render us great service and to make considerable progress in our special domain. It consists essentially in the anæsthesia being effected on the nerve

¹ From *La presse oto-laryngologique belge*, November, 1911.

trunk at some distance from the actual field of operation, so that the sensibility throughout the whole of the territory supplied by that trunk is suppressed. The procedure is based upon the experimental finding that certain anæsthetic agents, such as cocaine, novocaine, and encaine, when brought into contact with nerve-fibres, penetrate to their axis-cylinders and induce what is known as physiological section of the nerve, or nerve-block.

Many different local anæsthetics have been extolled as analgesics, but innumerable trials seem to show that it is cocaine which possesses the strongest anæsthetic powers. Cocaine it is that produces the most prolonged analgesia, especially when used in combination with adrenalin, which, by provoking ischæmia of the tissues on which it acts, retards the absorption (and consequent removal) of the alkaloid.

The solution we prefer for regional anæsthesia is the following, known by the name of *codrenine*, of which each cubic centimetre contains: cocaine hydrochlor. 0.02 gm., adrenalin hydrochlor. 0.0006 gm. Codrenine may be used in full strength, or it may be diluted with normal salt solution: Codrenine 1 c.c., normal salt solution 1 c.c.

Novocaine is sometimes employed instead of cocaine. Its analgesic properties are equal to those of cocaine, and it seems to be less toxic. Adrenalin should also be added to the novocaine solution. Here is the formula employed by Prof. Reclus: Novocaine 50 cgrm., adrenalin (1-1000) 25 drops, normal salt solution 100 gm.

The syringe we use is a Record syringe of a capacity of 4 c.cm., and furnished with two rings. The needle is 6 cm. long, graduated in centimetres, and gilded in the middle of its length. It is rather larger than the ordinary needles. A small movable catch on its stem permits us to determine the depth to which the needle is to penetrate.

The general technique of regional anæsthesia presents no difficulties. After the site of operation has been rendered aseptic the needle is inserted at a marked spot, and the piston is slowly pushed on so as to eject some of the analgesic solution during the passage of the needle through the tissues. The point of the needle may, at a given moment, find itself in the interior of a blood-vessel. For this reason it is advisable to detach the syringe from the needle before proceeding to inject a large amount of the anæsthetic. If the point of the needle is lying in a vessel of any size blood will then escape from it drop by drop. In that

case all we have to do is to withdraw the needle a little, or else to insert it a little deeper.

Anæsthesia of the region will not be complete until ten minutes after the final injection, especially if the solution contains adrenalin, which, by its vaso-constrictor action, delays absorption considerably.

The anæsthesia, when it has been well done, lasts from one to one and a half hours.

All the nerve-trunks with which we are concerned in rhinology belong to the first or second division of the trigeminal. In the case of the buccal cavity and the lower jaw we have to deal with the third division, while in the case of the larynx it is the superior laryngeal nerve that specially interests us.

Anatomical Considerations.

The nasal fossæ are innervated by the *spheno-palatine nerve* (branches from Meckel's ganglion), and by the nasal nerve.

The *spheno-palatine nerve*, a branch of the superior maxillary division of the trigeminal, after a course of 1 to 3 mm. comes into relationship with Meckle's ganglion, with which it communicates before breaking up into its terminal branches. Among these are: (1) The *superior nasal*, which supplies the mucosa of the middle and superior turbinal; the *naso-palatine*, which is distributed to the middle and upper part of the septum, as well as to the anterior quarter of the vault of the palate and to the mucous membrane behind the incisor teeth; (3) the *anterior palatine*, which supplies a great part of the palatine vault, and also shares in the innervation of the inferior meatus and inferior turbinal.

The *nasal nerve*, the most internal of the three terminal branches of the ophthalmic division of the fifth, follows the inner wall of the orbit, then after supplying the *long root of the ciliary ganglion* and some *ciliary nerves*, it gives off the *infra-trochlear nerve*. The nasal nerve then traverses the anterior ethmoidal foramen¹ to reach the cranial cavity, where it lies on the cribriform plate of the ethmoid. It enters the corresponding nasal cavity through the nasal fissure, and divides into two branches, of which the *internal* supplies the anterior part of the septum, while the *external* runs

¹ Both the French nomenclature and Dr. Broeckhaert's description of the course and branches of these nerves markedly differ from those given in standard English works on anatomy. Consequently, in order to avoid confusing our readers, we have taken the liberty of modifying the original text so as to bring it into conformity with the accepted English teaching.—D. M.

along the posterior aspect of the nasal bone, and, appearing on the face between the nasal bone and the lateral cartilage, is distributed to the skin of the tip of the nose (together with the skin of the vestibule and the anterior part of the nasal fossa. —Broeckhaert).

The *infra-trochlear* runs forward beneath the pulley of the superior oblique and gives off within the orbit a branch to the lachrymal sac and its passages. It emerges from the orbit between the facial artery and the angular vein and is directed horizontally to the root of the nose, furnishing a certain number of twigs to the integument of the bridge of the nose, and some fronto-palpebral filaments which supply the medial part of the upper eyelid and anastomose with branches of the supra-trochlear nerve.¹

The *nostril*, or *nasal vestibule*, receives its sensory nerves from (1) a branch of the *external nasal* division of the nasal nerve (2) nasal filaments of the *infra-orbital nerve*.

The sensory nerves to the *bridge of the nose* are furnished by (1) the *infra-trochlear*, which innervates the skin of the root of the nose; (2) the *external nasal*, which is distributed to the skin of the tip of the nose; and (3) nasal branches of the *infra-orbital* communicating with branches of the external nasal.

The *frontal sinus* and anterior ethmoidal cells are supplied by the nasal nerve (Broeckhaert).²

The *posterior ethmoidal cells* and the *sphenoidal sinus* are innervated by (1) the sphenothmoidal or posterior ethmoidal branch of the nasal nerve, an inconstant twig which passes by the posterior ethmoidal foramen (Broeckhaert), and (2) the superior nasal nerve, a branch of the sphenopalatine.

The sensory nerves of the *maxillary antrum* all come from the superior maxillary nerve. A certain number of osseous filaments are distributed to the maxillary bone and a certain number of mucous filaments supply the mucosa of the maxillary antrum. These nervous filaments proceed from the *dental branches* of the superior maxillary nerve, which arise during the passage of that nerve through the infra-orbital groove and canal. One of these dental branches, the least slender, is known as the *anterior dental nerve*. It descends in a small osseous canal in front of the maxillary antrum, and sends numerous filaments to the mucous membrane of

¹ We have adopted Dr. Broeckhaert's description of the infra-trochlear nerve, as it is more minutely detailed than that given in the English text-books.—D. M.

² According to English writers the frontal sinus receives its sensory supply from the supra-orbital nerve.—D. M.

that cavity, with which it is often in immediate contact. In addition to this source, the antrum of Highmore receives part of its nerve-supply from the *posterior palatine* nerves, the terminal branches of the sphenopalatine nerve. The posterior palatine nerve, which descends towards the vault of the palate by the posterior palatine canal, "frequently gives off in its passage small offshoots to the maxillary sinus which lies immediately in front of it" (Baril).¹

The *inferior maxillary division* of the fifth, which emerges from the cranium by the foramen ovale, breaks up after a short course in the anterior latero-pharyngeal space (in the depths of the zygomatic fossa) into two stout bundles: the *anterior*, comprising, among others, the *buccal* nerve; and the *posterior*, from which proceed muscular branches; the *auriculo-temporal*; the *lingual*; and the *inferior dental*.

Those which specially interest us are the buccal, the lingual, and the inferior dental.

The *buccal nerve*, after a short course between the two heads of the external pterygoid muscle, divides into two terminal branches, of which the buccal, exclusively sensory, continues the direction of the original trunk, and passing over the *tuberosity* of the maxilla, reaches the outer aspect of the buccinator muscle, supplying the skin and mucous membrane of the cheek.

The *lingual nerve* reaches the lateral aspect of the tongue, and, close to the stylo-glossus muscle, follows a submucous course as far forward as the point of the tongue. It is the sensory nerve of the inferior aspect of the point, and of the anterior two thirds of the dorsum of the tongue.

The *inferior dental nerve* traverses the dental canal and emerges at the mental foramen. It supplies with sensation the lower teeth and gums, and, by means of its terminal branch, the *mental nerve* is the sensory nerve of the chin and lower lip.

The *superior laryngeal nerve*, a little way above the greater cornu of the hyoid, gives off the *external laryngeal nerve*, which passes to supply the crico-thyroid muscle, and then, perforating the crico-thyroid membrane, gives sensibility to the mucous membrane of the subglottic region of the larynx. The main trunk of the superior laryngeal nerve passes between the thyro-hyoid and crico-thyroid muscles, piercing the latter along with the superior laryngeal artery to go to the mucous membrane of the epiglottis,

¹ English writers describe three posterior palatine nerves; presumably the above remarks apply to the large posterior palatine nerve, as it lies nearest the antrum.—D. M.

the base of the tongue and the supra-glottic portion of the larynx, including the posterior aspects of the cricoid and arytenoid cartilages.

Technique of Regional Anæsthesia in the Nose, Pharynx and Larynx.

I. The First Division of the Trigeminal.

(1) *Infra-trochlear Nerve*.—To anæsthetise the trunk of this nerve the skin lying below the inner part of the upper margin of the orbit is raised between the finger and thumb, and into the fold so formed the needle is inserted. After insertion the point of the needle—while the fluid is being injected—is made to move through an arc of a circle parallel to the orbital margin.

(2) *Nasal Nerve*.—The nasal nerve may be anæsthetised at two places: (a) in the orbit before it enters the anterior ethmoidal foramen; (b) after its appearance from under the nasal bone (external nasal nerve).

(a) *In the Orbit*.—The needle is applied perpendicularly in the supero-internal angle of the orbit, at the extremity of an imaginary line representing the depression which unites the root of the nose with the frontal region. After piercing the skin the sensation is experienced of being in a free space. We now seek to penetrate between bone and periosteum, the needle being made to scrape the surface of the bone. In this layer it is inserted to a depth of between $2\frac{1}{2}$ and 3 cm. As it advances (the liquid being ejected as it goes along) the point of the needle is inclined successively up and down so as to insure its contact with the nerve-trunk, which is stretched out horizontally between the periosteum and the anterior orbital foramen. With experience one learns to recognise the sensation of the needle in contact with the nerve.

(b) *External Nasal Branch*.—The depression in the lower margin of the nasal bone which corresponds to the emergence of the external nasal nerve is easily felt through the soft parts. This landmark having been duly noted, the needle is inserted and the subcutaneous injection made at that spot.

II. Regional Anæsthesia of the Superior Maxillary Nerve.

(1) *The trunk of the superior maxillary nerve*, shortly after its exit from the cranium by the foramen rotundum, can be reached either by the retro-maxillary route, by the route of the orbital floor, or by the buccal route.

A. Retro-maxillary Route.

(a) *Poirier's Method*.—Originally recommended by Poirier for the section of the second division of the trigeminal in cases of intractable neuralgia, this method, slightly modified, can be adapted to regional anæsthesia of the superior maxillary trunk. It is as follows: We commence by marking the superior border of the zygomatic arch and the angle it makes with the external angular process of the frontal bone. That done, the needle is inserted perpendicularly just above the superior border of the zygomatic arch, 1 cm. behind the external angular process. Passing between the fibres of the temporal muscle the needle encounters the outer wing of the pterygoid process, the anterior edge of which forms the posterior lip of the pterygo-maxillary fossa, into which the foramen rotundum opens. After it impinges upon the pterygoid plate the needle is withdrawn a little, and then passed in again a little more in front, so as to bring it past this lip of the pterygo-maxillary fossa. When it is evident that the pterygoid plate has been missed then one is aware of having penetrated to the pterygo-maxillary fossa.

This method, in our opinion, is blind and uncertain. In many cases the needle is prevented from reaching the nerve by the upper end of the pterygo-maxillary fossa being on a lower level than that of the upper border of the zygoma. In other cases the osseous ridge on the zygomatic aspect of the sphenoid, which limits anteriorly the surface of insertion of the external pterygoid muscle, is so strongly marked that it covers the upper part of the zygomatic fossa, and so presents an impassable obstacle to the needle. (Potherat.)

(b) *Munch's Method*.—The method employed by Munch is the same as that adopted by Bandouin and Lévy for the destruction by alcohol of the second division of the fifth in intractable neuralgia of the face.

The needle is entered perpendicularly *under* the zygomatic arch at a point corresponding to a line drawn vertically downwards from the posterior border of the orbital process of the malar bone. From this point the needle is directed slightly upwards and backwards in the direction of an imaginary line drawn horizontally backwards from the inferior extremity of the nasal bone. At a depth of 5 cm. the point of the needle touches the trunk of the nerve in the roof of the pterygo-maxillary fossa.

This method has been well received, but it seems to lack precision.

B. The Route by the Orbital Floor.

This method seems to us to be the most certain. At all events, in practice it has always given us satisfaction. The procedure is simple.

The needle is inserted immediately above the inferior margin of the orbit about 1 cm. from its infero-external angle. As it is advanced, care must be taken to direct it a little outwards and to make it scrape along the bony floor of the orbit until the finger pushing the syringe can feel that the needle has penetrated to soft tissue. From this point onward it is in the spheno-maxillary fossa, which it traverses from before backwards along the nerve-trunk. The outward trend of the needle should be maintained as far as this point. It is important not to exceed a depth of 4 cm., because to pass deeper would be to over-reach the mark—Meckel's ganglion. By this route the needle keeps internal to the bony ridge which so often bars the zygomatic route to the pterygo-maxillary fossa.

C. The Buccal Routes.

(a) *Oswalt's Method.*—The needle is inserted behind the wisdom tooth and passed through mucosa, submucosa, and external pterygoid muscle; then it passes upwards in the zygomatic fossa along the outer wing of the pterygoid process, until finally it strikes against the greater wing of the sphenoid. It is then guided forward along the angle formed by the junction of the pterygoid process with the greater wing of the sphenoid, until the osseous resistance is lost. By this time the point of the needle is lying in the deepest part of the pterygo-maxillary fossa and in the immediate vicinity of the foramen rotundum.

(b) *Baird's method* utilises as its avenue of approach the posterior palatine canal, the buccal orifice of which, in the dry skull, is situated at the base of the third molar tooth. Running upwards and slightly backwards, this canal, which is about 4 cm. long, normally leads to the foramen rotundum. Baird's technique is as follows: "The mouth is opened widely. A platinum needle, 5 cm. in length, is boldly inserted into the gum about 4 mm. to the inner side of the neck of the second molar. The barrel of the syringe rests upon the lower lip, and it is advanced so that after a progress of about 1 cm. the point of the needle arrives at the foot of the third molar. Here it comes to the orifice of the large superior

palatine canal after one or more attempts. Some of the solution is injected as it passes up, and progress is arrested at about $4\frac{1}{2}$ cm.

"It is important, in order to strike the palatine foramen, not to direct the needle too much upward and backward, in which case it would miss the canal, slip up along the inner wing of the pterygoid process and perforate the pharyngeal mucous membrane. This error is easily perceived, for the liquid which is injected passes into the pharynx and excites swallowing and retching movements. The needle is then withdrawn and directed more vertically."

A careful study of many skulls has led us to doubt the efficacy of this method. We have been able to assure ourselves that the posterior palatine canal, which ought, according to Baril, to be at least 2 to 3 mm. wide, is very often too narrow to admit the needle. It is generally easy to enter the canal, but our investigations have shown that in 25 per cent. of cases the needle would not penetrate for more than a few millimetres. We have determined, further, that the canal is sometimes directed so obliquely backwards that it does not lead to the foramen rotundum. In many cases the needle, on emerging from the canal, comes to impinge on the outer surface of the pterygoid process, or on the roof of the zygomatic fossa, in which event it cannot come into contact with the superior maxillary nerve.

These anatomical considerations have led us to regard Baril's method as only suitable to a limited number of cases.

(2) *The Infra-orbital Branch.*—The cutaneous route alone seems worthy of our consideration. The buccal route, which we believe to be impracticable for the introduction of the needle into the infra-orbital canal, we shall therefore leave on one side.

The infra-orbital foramen is often appreciable to palpation. It is situated at the level of the junction of the inner third with the middle third of the inferior margin of the orbit. It may be found, as has been correctly stated, on a line drawn from the infra-orbital depression to the commissure of the lips, about $\frac{1}{2}$ cm. below the margin of the orbit. Another landmark, easy to find, is the suture between the malar bone and the orbital margin of the superior maxilla, which is situated, with remarkable frequency, immediately above the infra-orbital foramen.

The needle is inserted, with an upward direction, in the region of the infra-orbital foramen. As soon as it has penetrated some little distance a few drops of the solution are expressed. When the pain occasioned by the puncture has disappeared, the needle is pushed in deeper until the bone is felt; withdrawing it then a

little way, we endeavour to discover the orifice of the infra-orbital canal, remembering that the canal runs from below upwards, and from within outwards.

Save in the rare case of multiple orifices (forty-four times in 217 skulls), or of the presence of an ungual process so prominent as to cover almost the whole of the infra-orbital foramen, hardly any difficulty will be experienced in introducing the needle as far as a depth of $\frac{1}{2}$ to 1 cm.

III. Regional Anæsthesia of the Inferior Maxillary Nerve.

(1) TRUNK OF THE INFERIOR MAXILLARY.

It is not easy to reach the third division of the trigeminal as it issues from the cranium. The foramen ovale, by which it emerges, is situated very deeply, quite at the bottom of, and behind the depression, hidden by the coronoid process of the mandible, on a line almost parallel to the zygomatic arch. "It is almost always concealed by the upper part of the bony pointed arch, joining the posterior border of the greater wing of the sphenoid to a small bony spine situated anterior to the spine of the sphenoid, what we may designate the retro-ogival spine" (Chipault).

Two routes have been followed to come at the trunk of the inferior maxillary; the first, the buccal route, was advocated by Ostwald in 1906; the other, the zygomatic route, is that which is most generally adopted.

A. *The Buccal Route.*

The injection is made with the mouth well open and the field of operation well illuminated. As in the search for the foramen rotundum, Ostwald inserts the needle behind the wisdom tooth and perforates the tissues lying posterior to the superior gingivo-buccal recess. He follows as his guide the outer wing of the pterygoid process. Having thus reached the upper wall of the zygomatic fossa, against which the point of the needle strikes, he directs himself posteriorly, and, as soon as the osseous resistance comes to an end, tumbles straightway into the oval window.

B. *The Zygomatic Route.*

There are two sets of methods by this route—the supra-zygomatic and the sub-zygomatic.

(a) *Supra-zygomatic Methods.*—The search for the foramen

ovale by this route is not always a simple and easy matter. Orientation is quite often very difficult, and the examination of a series of skulls enables one to determine how many variations there are which render the foramen inaccessible by this route.

The needle, inserted perpendicularly above the arch of the zygoma, proceeds till it strikes the outer wing of the pterygoid process. It is then directed backwards so as to reach the foramen ovale. It should not be inclined too much in a downward direction or it will miss the foramen and perforate the pharyngeal aponeurosis.

(b) *The sub-zygomatic method*, extolled by Lévy and Baudouin for injecting alcohol in intractable neuralgia of the inferior maxillary nerve, is, in our opinion, the method of choice for regional anaesthesia of the third division of the fifth nerve.

We proceed to attack the nerve in a space, $1\frac{1}{2}$ cm. square, bounded above by the base of the skull, below by the internal maxillary artery, behind by the temporo-mandibular articulation and the middle meningeal artery, and in front by the pterygoid muscle. It contains no vessel of any importance.

The landmark for the insertion of the needle is the tubercle of the zygoma, which is easily felt on palpation. The needle is introduced in front of the tubercle in such a way as to graze the lower border of the zygomatic arch. Having reached a depth of $3\frac{1}{2}$ cm. the needle is arrested by the outer wing of the pterygoid process, the posterior border of which constitutes an important landmark. It is there directed backwards and arrives inevitably at the foramen ovale.

(2) *The Buccal Nerve*, although the buccal nerve can easily be reached by the cutaneous route, we prefer the buccal route. Consequently we shall deal only with it.

The most useful landmark for finding the nerve in the mouth is the furrow of the buccal nerve, bounded externally by the anterior border of the descending ramus of the lower jaw, and internally by the anterior border of the internal pterygoid muscle.

The mouth being held open and well illuminated, the external lips of the anterior border of the ascending ramus, which is also the external boundary of the furrow of the buccal nerve, is recognised by the index finger. It is internal to this important landmark that the anaesthetic should be injected from the middle of the level of the centre of the last upper molar as far as the crown of the last lower molar. All we have to do is to insert the needle, so to say, under the mucous membrane, from which the trunk of

the nerve is only separated by a thin couch of adipose tissue and by a few fibres of the buccinator muscle.

(3) *The Lingual Nerve*.—The regional anaesthesia of the lingual nerve is easily effected. The point of the tongue is drawn out of the mouth by an assistant and held to the side opposite to that of the site of injection. The point of the needle is inserted under the mucous membrane in the linguo-gingival fold, $\frac{1}{2}$ cm. from the reflection of the mucous membrane from the side of the tongue. A line of injection is made commencing at the outer (? inner) side of the last lower molar and extending forward for a distance of 3 or 4 cm. in the linguo-gingival hollow. The nerve, placed superficially in the slender bed of cellular tissue which underlies the mucous membrane, is thus bathed in the anaesthetic solution.

(4) *The Inferior Dental Nerve* may be reached either before its entrance into the osseous canal of the mandible, or at its exit from the mental foramen.

A. Above the Mandibular Foramen.

Here, again, we may reach the nerve either by a buccal or by a cutaneous route.

(a) *Buccal Route*.—This method, often a blind one, has as its landmark the lingula ("spine of Spix") which dominates the entrance to the dental canal. When the lingula is well developed it can be easily felt with the finger; at other times it is small and difficult to discover. Again, the spheno-maxillary ligament may be abnormally developed and completely mask the nerve, so as to present an insurmountable difficulty. Sicard, in this method, employs a curved needle mounted on a hollow handle.

(b) *Cutaneous Route*.—Schlosser reaches the lingula by the cutaneous route anterior to the mastoid, crossing the postero-internal border of the mandible. The risk of injuring the facial nerve by this method is shown by Schlosser's three cases of consecutive facial paralysis.

B. At the Mental Foramen.

The needle is inserted under the skin in the region of the mental foramen. If the foramen is sufficiently large to receive the needle, a certain amount of solution may be injected into the canal itself. It will be remembered that the mental foramen is found on the anterior aspect of the inferior maxilla, almost always in a line with the second bicuspid; sometimes a little in front of it.

The nerve can also be anæsthetised by introducing the needle in the gingivo-labial recess, after having turned down the lower lip.

IV. Regional Anæsthesia of the Fauccial Tonsil.

The faucial tonsils receive their sensory supply from the glosso-pharyngeal nerve and from the middle palatine nerve, one of the terminal branches of the sphenopalatine.

The glosso-pharyngeal innervates exclusively the lower pole of the tonsil, while the lower two thirds of the anterior pillars are supplied by special branches of the same nerve, the *tonsillar branches*, which come off from the main trunk at the point where it reaches the side of the base of the tongue. The middle palatine nerve is distributed to the upper pole of the tonsil and to the posterior pillar of the fauces.

Relying upon these anatomical facts Ruprecht recommends the following procedure for the regional anæsthesia of the faucial tonsil.

Begin by introducing the needle into the base of the anterior pillar and so into the plica triangularis, expressing the solution slowly. In this way anæsthesia of nearly the whole of the upper third of the anterior pillar is gradually effected. Then make a similar injection into the upper part of the same pillar.

In order to complete the anæsthesia of the tonsil, next inject the liquid into the parenchyma of the gland, passing the needle, at the same time, into the region of the upper pole.

The anæsthesia thus produced is not complete for eight or ten minutes.

V. Regional Anæsthesia of the Larynx.

(1) *The Superior Laryngeal Nerve.*—(a) *Frey's Method.*—This is begun by seeking for the position of the greater cornu of the hyoid bone and the postero-superior angle of the thyroid cartilage. The point where the nerve passes into the larynx is midway between those two landmarks.

The patient is seated with the head raised a little. The larynx is steadied by the left hand placed on the side opposite to that of the injection. The needle, directed horizontally towards the middle line, is inserted a little below the seat of election. Having traversed the resisting skin, the needle is felt to reach a free space. At this moment its point, at a depth of about one centimetre, is lying deep

to the thyro-hyoid muscle and superficial to the thyro-hyoid membrane. The needle is then directed a little posteriorly so as to bring it more into the direction of the nerve, and the solution is injected as the needle is gently brought back again forward and inward.

Frey's method, which is rather uncertain, does not, according to Chevrier and Canzard, guarantee success to the inexperienced operator. "There is nothing to indicate when the needle has reached the thyro-hyoid membrane, and thus there is the risk of remaining on this side of the thyro-hyoid muscle and so missing the nerve."

(b) *Method of Chevrier and Canzard.*—These authors take as their landmark the superior border of the thyroid cartilage, "always easy to feel if we begin at the pommum Adami." The skin is pricked with a curved needle two centimetres from the middle line and one or two millimetres below the level of this border. The solution is gently injected so as to anæsthetise the skin and the subjacent planes, and the needle is then directed straight into the depths as far as the thyroid cartilage. Here it is arrested, and the detachment of the thyro-hyoid muscle is then sought by injecting a little more of the solution. Finally, "lowering the syringe so as to carry the point of the curved needle upwards and a little backwards, the injection is made as the needle advances; the mass of the injection is projected into the plane of the nerve and towards its situation." Gentle massage of the region from below upwards and from before backwards with the thumb ensures the diffusion of the cocaine.

(2) *The Recurrent Laryngeal Nerve.*—So far, cocainisation of the recurrent laryngeal nerve has hardly ever been employed save in certain forms of laryngeal spasm. As we have demonstrated elsewhere, there is nothing to prove that the human larynx owes its sensibility to any nerves other than those proceeding from the superior laryngeal and the anastomotic branch of Galen; and this even although we may be convinced that the trunk of the recurrent laryngeal, or as we have more properly designated it, the recurrent œsophago-laryngeal, comprises not only centrifugal motor fibres for the muscles of the œsophagus, trachea and larynx, but also centripetal fibres—particularly in relation to the cellular elements of the tracheal glands and mucous membrane—and of "medullipetal" fibres, belonging to the sympathetic system.

Be that as it may, in order to anæsthetise the recurrent laryngeal nerve, or at least those of its branches specially intended for

the larynx, we have recourse to the following procedure, for which we are indebted to Chevrrier and Canzard:

"At the extremity of the angle which the upper border of the thyroid cartilage forms at the middle line, the needle is inserted, while at the same time an injection is made. Search for and avoid contact with the inner surface of the thyroid cartilage. Direct the needle obliquely downwards, backwards and outwards towards the postero-inferior angle of the cartilage, and inject the anæsthetic solution. It will distend the recess and bathe the terminal branches of the recurrent. From 1 to 2 c.cm. of the solution is all that is needed to surround the nerve."¹

A CASE OF ACUTE CEREBRO-SPINAL MENINGITIS OF NASAL ORIGIN.

BY H. L. GREGORY, M.A., M.B., B.C.CANTAB., M.R.C.S., L.R.C.P.,
Highgate, London, N.

ON Sunday, June 23, 1912, I was called to see a boy, aged seventeen, who was complaining of pain in the head.

He was a fairly healthy lad, but had been, his mother said, always easily tired. As a child he had had nocturnal enuresis. A year ago (May, 1911) I attended him in an ordinary attack of influenza.

In October, 1911, he was treated by a surgeon for chronic nasal catarrh, by removal of the inferior and part of the middle turbinates and an adenoid mass.

For a short time after the operation the right antrum was dull on transillumination, but it cleared up satisfactorily. He was usually constipated.

Later on I was told by his mother that since the operation there had been at times a discharge from the nose with some blood in it, and complaint of headache on stooping, but apparently these were thought to be matters which would right themselves.

The surgeon who had operated told me that he had seen the patient fairly recently and that there had never been any evidence of ethmoidal suppuration, and the patient regarded himself as cured.

So much for the history, the latter part of which was only elicited by questions two days after my first visit.

¹ Readers studying this article are advised to follow out the anatomical directions on the dry skull.—*Trans.*

He was perfectly well on June 22, did not seem to mind the heat (they were a few of the real hot days of the summer), and after returning from business in the city had sufficient energy to spend some time cleaning his bicycle. He went to bed apparently quite well, and woke on the 23rd with intense pain in the head, "over the top."

It got worse, so after lunch, as his temperature was 100° F., he went to bed. As he had had no action of the bowels for two days he took some salts, which made him vomit, and he had a rigor.

He vomited two or three times more and I was sent for at 7 p.m.

He looked pale and puffy about the face and had slight œdema of the ankles. His tongue was thickly furred and his sigmoid flexure loaded. Heart and lungs were normal. The pupils were small, but reacted, and there was some intolerance of light. There was no squint, no retraction of the head, but no knee-jerk. He seemed dull and heavy, obsessed by the severe pain in his head, of which he constantly complained.

To my mind the diagnosis was between heat stroke and commencing meningitis, and I gave him 3 gr. of calomel and ordered an icebag to his head.

At 1 a.m. next morning, the 24th, he was delirious and vaguely struggling about the bed. He had not vomited again, nor had he passed any urine or feces.

Whilst I was there, in response to a suggestion from his father, he suddenly got out of bed and passed water, but without any control of its direction. He had taken a little milk, but only a little at a time. Pulse was 90, respirations 40, shallow, and temperature 102° F.

At 9 a.m. he was quieter; the bowels had been relieved—with the aid of glycerine suppositories—of a large motion. The urine contained 2 gr. of sugar to the ounce. I ordered a mustard leaf to the back of his neck, and at 2 p.m. one of my partners saw him with me.

The pupils were still small, but reacted less to light, there was no squint, and no conjugate deviation, but we could not get the eyes to turn to the left, possibly because the window was on that side. We agreed that the diagnosis was probably meningitis, and arranged for a consultation with Dr. Henry Head next day.

During the evening he became more sleepy, and by the next morning was comatose. The left pupil dilated to 4 mm., while the right was 2 mm. in diameter. The right optic disc was rather indistinct, the left paler and clearer in outline.

Dr. Head saw him at 10 a.m., June 25th, when head-retraction had become manifest and Kernig's sign was present. He concurred in the diagnosis, and by lumbar puncture drew off 10 c.c. of cerebro-spinal fluid, which was pinkish-yellow, opalescent, faintly turbid. This was sent to the London Hospital for examination. The prognosis was exceedingly grave and justified by the event, for the patient sank rapidly and died with hyperpyrexia (107° F.) at 8.45 p.m., little more than forty-eight hours after being seen for the first time and sixty hours from the onset.

Dr. Panton's report on the cerebro-spinal fluid was as follows: "Globulins present in great excess. Centrifuged deposit: Polynuclear cells in very large numbers, many Gram-positive extracellular diplococci. Cultures: Pneumococcus in pure culture."

We were able to examine the head and spine *post-mortem*, and found the dura mater fairly adherent to the skull and inflamed at the base of the brain. The pia and arachnoid were also inflamed at the base, but not greatly. There was, however, pale greenish-yellow gelatinous-looking exudate tracking up along the vessels in the sulci, particularly from the anterior and middle fossæ. On stripping the dura mater from the anterior fossa we found a hole, 7 mm. by 5 mm., with inflamed edges, in the roof of the left posterior ethmoidal cells, through which a probe passed with great ease directly into the left nostril. The cells were full of gelatinous muco-pus.

The dura of the cord contained and was almost full of fluid, which was rather thicker and more yellowish than that removed by lumbar puncture.

Here we have, then, a case of acute cerebro-spinal meningitis, arising directly from a chronic or sub-chronic intra-nasal condition, which was unsuspected during life and only definitely revealed *post-mortem*.

It is in the hope that this perhaps unusual but perfectly demonstrated source of infection may be of interest to others that these notes have been strung together.

SOCIETIES' PROCEEDINGS.

BRITISH MEDICAL ASSOCIATION.

Meeting at Liverpool, July, 1912.

COMBINED SECTIONS OF LARYNGOLOGY, RHINOLOGY, AND OTOTOLOGY.

*Abridged Report.***Discussion on the Education of the Specialist in Laryngology and Otology.**

OPENING PAPERS.

I. Professor Holger Mygind (Copenhagen): Continental countries may be divided according to their teaching arrangements into (1) those in which oto-laryngology is taught at most or all of the universities; (2) those in which only some of the universities give this teaching; (3) those in which there is no official teaching.

Otology and laryngology are united at most Continental universities just as they are practised in combination by most Continental specialists. Germany is far ahead of any other country in the number of professorships in oto-laryngology, and in Berlin, Freiburg, Königsberg, Munich, and Würzburg, the subject is divided, there being a chair each for otology and laryngology, and a very high standard of education in oto-laryngology is to be found in the same country. Austria, however, is not far behind, and it is to Austria and Politzer that we owe the earliest teaching in our speciality. In both of those countries the training of the specialist resolves itself into three stages: (1) instruction during the ordinary medical curriculum; (2) post-graduate instruction; (3) training received in posts of assistant, etc., to special clinics.

The third is the most important, as the privat-docents and finally the professors are chosen from these assistants. It is rare to find on the Continent a recognised specialist who has never held such a post.

Defects in Continental Education.—To begin with the first stage mentioned above, the education of the medical student in our work is too superficial, and too much time is wasted in lectures.

In respect of the third stage, Dr. Mygind held that the assistant's general medical education, especially in surgery, was insufficient. Moreover, the appointment as assistant was often too short, many future specialists spending only a few months in the post. Thirdly, the rush and overcrowding of the public clinics give rise to superficiality of examination of the patient and incomplete case records. Finally, many clinics do not possess beds, and there is no opportunity of studying the more serious cases and operations. There is, on the Continent, as elsewhere, no regular system of education, and many try to get through their special education as quickly as possible.

Remedies for these Defects.—After outlining various improvements in the medical students' training, the speaker pointed out that medical students should be examined in the special subject by the professor of that subject.

Post-graduate courses should be subsidised by the State, so as to lighten the cost to the individual.

With regard to the true specialist, he ought to spend at least eighteen months in a general hospital, nine months of which should be devoted to general surgery, before entering as assistant in the special clinic. The minimum service (in a well-equipped special clinic) should be one year. Each clinic should possess salaried senior assistants.

Qualification of the Specialist.—Ought there to be a diploma representing the minimum requirements of a medical man who wishes to practice as a specialist? And should this diploma be voluntary or compulsory? The drawback to a voluntary diploma is that, although it may represent very little, it may give its owner an unjustly high stamp. In Sweden, at present, a scheme is under debate in which it is proposed that the would-be specialist should submit himself to examination by a Board appointed for the purpose.

Dr. MYGIND favoured a compulsory diploma which would protect the public from insufficiently educated practitioners.

II. **Dr. P. Watson-Williams** said that in Britain there are, in all, 713 beds in 55 hospitals set apart for throat, nose, and ear cases, an accommodation to be increased shortly. Most of the British special clinics are constituted on a sound basis, but one or two university clinics have no beds allotted to them, so that cases requiring admission for operation have to be handed over to the general surgeon. Again, in one or two hospitals with a special clinic, patients are not referred to the specialist unless they go first to the special department, an arrangement unfortunate from every point of view. What was required was, (1) recognition of otology and laryngology in the students' curriculum; (2) more complete organisation and equipment of the special departments; (3) systematic post-graduate training with a distinctive qualification or degree for those who wish to become specialists.

(1) *Training of Medical Students.*—Medical practitioners are frequently sent forth without adequate elementary training in nose, throat, and ear diseases. Several universities do insist on students attending a special clinic, but in the examinations ignore these subjects. The University of St. Andrews, the National University of Ireland, and the Conjoint Board of the Royal Colleges of Physicians and Surgeons, Ireland, are the only corporations where this course is obligatory, *as well as examination by specialists.* Edinburgh, one of the most advanced centres as regards our speciality, with its splendidly organised teaching clinic, second to none in the United Kingdom, allows its candidates for graduation at the university and choice between pædiatrics and oto-laryngology. One might well ask, "Are not both required?" Students should be examined by experts in oto-laryngology just as they are examined by experts in medicine, surgery and gynaecology.

Inadequate Equipment.—Too much "hack work" is thrown on the director of the clinic for want of trained assistants; frequently changing house-surgeons with no special training are all that is supplied, even when the material is large. Thus adequate opportunity for teaching students and for original research is absent. In these respects we are lamentably behind Germany and Austria.

The Education of the Specialist.—Why should a member of the profession be free to assume a title connoting special knowledge and experience unless he can prove that he had an adequate training? Physicians and surgeons safeguard their qualifications. In like manner a higher

qualification should be demanded of the specialist after a course of training *parallel* to that required for the consulting physician or general surgeon.

A sound upbringing in medicine and surgery is the only safe foundation for any special branch. But the tendency is to make another speciality, general surgery, the academic test of fitness in laryngology, while medicine and even systematic training in our department are a secondary consideration, with a consequent danger of our becoming too exclusively surgical. Our kingdom includes both medicine and surgery.

Those who specialise in laryngology and otology should have a thorough knowledge of the anatomy, physiology, and pathology of the ear, nose, and throat, including the relationship and bearing of other territories to these regions. They should also be acquainted with the methods of diagnosis and of treatment of diseases of the throat, nose, and ear, and when the period of special training is completed they should have the opportunity of proving their proficiency.

Before presenting himself for a higher specialist examination, two years *at least* should elapse after the qualifying examination, and in addition to one year of general hospital practice, the practitioner should spend one year at least in attending recognised special clinics and classes. The examination should be as thorough as that required for the higher medical or surgical degrees. For example:

First day: Three hours' paper on special anatomy (including embryology) and physiology.

Oral examination on specimens, and anatomical dissections, etc.

Second day: Three hours' paper on laryngology, rhínology, and otology.

Three hours' paper on general medicine, surgery, and pathology in relation to the special branches.

Third day: Examination and report on at least one ear, one nose, and one throat case.

Viva voce examination, demonstration of clinical methods of examination of patients, etc.

A system of post-graduate education should encourage the advancement as well as the acquirement of knowledge, wherefore full provision should be made for the original thinker. He suggested, therefore, as an alternative, that any candidate, having been qualified five years and who has held office in or who has regularly attended recognised special clinics for three years, might present an original research or thesis, which, if considered of sufficient merit, should exempt from a part or the whole of the examination at the discretion of the examining board. This would enable existing specialists to acquire the special qualification by presenting original work.

The only examining body which examines post-graduates who desire to specialise in oto-laryngology is the Royal College of Surgeons of Edinburgh. For their Fellowship each candidate undergoes examination in one special branch in addition to general surgery. This is a liberal move in the proper direction, but it is open to several criticisms. No evidence, for example, is demanded of the candidate's attendance at special clinics. Further, the examination in the speciality should be more thorough. And, finally, the subject is regarded as a subsidiary department of general surgery.

The principle now adopted by the University of London, which grants an M.S. in odontology, is sounder. The possession of the B.S., the lower degree, is sufficient evidence of a thorough knowledge of the principles of general surgery. The further regulation may also be commended which permits the substitution for part or the whole of the examination of a

thesis or publication embodying independent research. University *diplomas* in special subjects are to be deprecated; the special tests and training should be worthy of a *degree* ranking with an M.D. or M.Ch.

Under these better conditions we shall no longer be persuaded that the best preparation for an otologist or a laryngologist is training to pass an examination on the details of prostatectomy, gastro-intestinal surgery, and almost everything but what pertains to an exact knowledge of our own work, which is to be "picked up" as he wends his way.

III. Dr. Herbert S. Birkett (Montreal) said that in the M'Gill University at Montreal there were post-graduate classes in oto-laryngology, but they were very elementary, since their object was merely to perfect the knowledge of the general practitioner of medicine.

In the United States of America the work may be summarised as follows: In the study of the anatomy of the special regions plenty of material is provided for the carrying out of dissections. Physiological and pathological studies are carried out in the laboratories under proper supervision. From this groundwork the post-graduate passes to clinical instruction in the out-patient department, and, having become more familiar with diseased conditions, takes up a course of operative work on the cadaver. As the student progresses he is given the position of "clinical assistant" in the department, thus enabling him to carry out much of the minor work, and at the same time affording him the opportunity to assist in the major operations. In some of the best institutions a position as resident is available to the more promising student. The length of time allotted to these courses varies in the better institutions from six months to one year. At the close of one year's tuition the student is given a certificate of proficiency, but only after having passed a severe examination.

From this description it is evident that the ideal course of training of the specialist has not been reached. It is to be noted, for instance, that in these post-graduate courses no distinction is drawn between the teaching of the physician whose knowledge of the special subject is practically a negative quantity and the physician who has already acquired the preliminary training as to methods of examination, etc. The former is practically an undergraduate in those subjects, and no proper provision is made for his teaching. It is this individual who, having acquired a most meagre training, extending from six weeks to three months, is the most dangerous individual in the community, and who brings discredit upon specialism at large. This danger is increased by the issuing of a certificate, which is displayed in his office, announcing that he has reached the position of a specialist.

The question as to how the conditions may be met is answered by the teaching of these subjects in the under-graduate period in M'Gill University for example. Here the medical curriculum is one of five years' duration. In his fourth year the student is taught the normal anatomy and physiology of these regions, including the normal hearing tests, together with the use of instruments for diagnosis. In the fifth year the work deals with the more common pathological variations, as exemplified in pathological specimens and in living patients. The classes are limited to six students and two demonstrations of not less than one hour's duration are given weekly. At the close of each session examinations are held. The work is obligatory.

Similar courses of instruction would meet the requirements of the general practitioner.

With regard to the preparation of the specialist, Dr. Birkett held that he ought to begin with, to be a graduate in arts and to hold a degree from the best medical universities. After graduation, he should become a resident in a large general hospital and subsequently engage in general practice for a couple of years in order to obtain self-reliance and a knowledge of human nature. The training should be continued in the manner outlined by Shambaugh.¹ Special courses in embryology, physiology, and pathology should be followed for one year at universities and colleges with well-equipped laboratories. This work should lead up to a higher degree, that of Doctor of Philosophy in Medicine. These courses could be followed while the individual was in general practice. Subsequent to this, the aspiring specialist should spend one year in learning clinical work and in visiting foreign centres of learning.

In order to prevent insufficiently trained men from practising as specialists the speaker held that powers should be obtained by legislation. In conclusion, he condemned the multiplicity of special societies, such as exist particularly in the United States.

Mr. T. MARK HOVELL (London) considered that examination in laryngology and otology should form part of the final examination, and that it was a retrogressive step to separate in hospital practice the departments for treating affections of the throat, nose, and ear. As regards the education of the specialist in laryngology and otology, in addition to a sound general education, it was essential that he should be well qualified in all special subjects, and especially in ophthalmology, dermatology, gynæcology, and bacteriology. Mr. Hovell concluded that, broadly, without some knowledge of such special subjects the laryngologist was apt to be too microscopic.

Mr. F. H. WESTMACOTT (Manchester) said that they had to consider (1) the education in special subjects for those about to engage in general practice, and (2) those who intended to devote their lives to the special practice of the regions of the ear, nose, and throat. For the former a compulsory attendance at a recognised clinic to examine cases and attend demonstrations was all that was necessary, provided questions were asked in these subjects at the final examination for a degree. He should be trained to the use of instruments of diagnosis. For the specialist the requirements were: (a) A higher degree; (b) a residence in a general hospital as house-surgeon and house-physician; (c) a thorough knowledge of the anatomy and physiology of the nose, throat, and ear, acquired by the study of skilful preparations and dissections; (d) a close and intimate study of cases in a clinic of large dimensions with variety of cases, operations, and after-treatment. He could say without fear of contradiction that this training could only be obtained in the clinics of the larger university towns on the continent. From personal knowledge he had learned that one must go through the higher special training in a place where all the material could be collated and systematically dealt with. He thought the question of a special degree was impracticable and unnecessary. Practical training, and not theoretical, was what they required. In this country there were no clinics where first-rate men could devote the necessary time to hospital teaching, owing to the large size of their private practice, and they had not an adequate staff of highly-trained assistants or the number of cases and materials to carry out the education required. This was possible abroad, owing to the chairs at the universities in these subjects. The work for teaching a student and that for a specialist were

¹ Shambaugh, George E., "The Preparation of the Specialist," *Journ. Amer. Med. Assoc.*, 1907.

widely different; while the former could and ought to be carried in every medical school, the latter was possible only in a few selected places.

Dr. JOHNSON HORNE (London) argued that it was not necessary nowadays for the embryo specialist to go abroad. They were somewhat handicapped in this country by having to deal with people who had hardened their hearts against specialists. Instead of granting a certificate he was in favour of the student having to write a thesis. He thought that all specialists should be examined by the State before being allowed to assume the title.

Mr. ROBERT WOODS (Dublin) suggested that while the professional education of the specialist was of the highest importance, the education of the student's eyes and fingers in a physical laboratory or workshop should not be lost sight of.

Dr. WILLIAM PERMEWAN (Liverpool) agreed with other speakers that England was far behind most other countries in the teaching of oto-laryngology. They were in a condition of utter chaos in this country. Apart from the question of higher degrees, and making their subjects compulsory in qualifying examinations, the position of the specialist was still in some hospitals extremely difficult and anomalous. The position of the specialist should be on exactly the same plane as that of the general surgeons and physicians. He was inclined to favour a compulsory examination by specialists before admitting men to the fold.

Sir SIR CLLAIR THOMSON (London) said that Dr. Mygind's paper again showed how well organised oto-laryngology was in Germany, and how in this country they still muddled on in the old way. But they must accept this country and its ways as they found them: the national habit was to evolve slowly, and he himself had much less faith in examination and legislation than in slow and steady evolution. Dr. Watson-Williams' proposals were ideal, but he asked too much. He himself was not a crusty conservative in this matter; he felt strongly that progress should be pushed on, but that it was best done by their own personal exertion and corporate life. They could do much by showing that they were neither physicians nor surgeons, but a combination of both; that they were not mere tradesmen; that they were doing sound and scientific work in their schools, hospitals, and medical societies, and that they did not shirk work, either in private or in hospital. They should insist on the importance and dignity of their calling by demanding beds and a proper equipment of the hospitals they were attached to, and by urging the necessity of training and examining all students in oto-laryngology before giving them a diploma. Until they had raised their own standard and dignity, and until they insisted on the absolute necessity of oto-laryngology for all pass examinations, he thought it unreasonable to put forth a demand for a separate and particular examination for a specialist.

Mr. GEORGE JACKSON (Plymouth) said that he had drawn attention to this subject in the General Medical Council when he was a member of that body. In reports of various examinations it was the rarest thing to have any questions asked in either otology or laryngology. There were great objections to the multiplication of diplomas. Already there were examinations by various bodies for a diploma or degree in psychiatry, so that after a time a man would have to be passing no end of examinations, which would absorb more time than it was possible for the ordinary man to devote to the subject. He could not therefore agree with the introducer of the discussion as to the necessity of a special diploma or degree.

Dr. DAN MCKENZIE (London) said that the subject divided itself into two parts—first of all the education of the medical student in their

speciality: and, secondly, the education of the specialist himself. As regards the former, it should not be forgotten that what he should be taught was to recognise the occurrence of the dangerous symptoms. For example, there were few general practitioners who realised the meaning of vertigo in cases of chronic middle-ear suppuration. These were the matters to which the students' attention should be directed, and not to details of treatment or to manipulative measures. With regard to the training of the pure specialist, the speaker, after some hesitation, had arrived at the conclusion that examinations and specialists' degrees were unnecessary in this country. There was no great abuse of public confidence by pseudo-specialists in Britain, and until there was they could not approach the General Medical Council with a resolution asking them to make such qualifications compulsory. Turning to the education of the specialist in this country, he agreed with the speakers who said it was not so poor as Mr. Westmacott had made out.

Dr. WALKER DOWNIE (Glasgow) said that reference had been made by several speakers as to the desirability of including laryngology and otology amongst the compulsory subjects in the medical curriculum. Was it not the case that, by a recent ordinance of the General Medical Council, those two subjects had been placed under the category of compulsory subjects? In Glasgow, where, up till now, attendance on a course of instruction in laryngology had been optional, fully 90 per cent. of those presenting themselves for the degree examination at the University had attended a course of practical instruction in laryngology. Henceforward attendance by the students on a course of instruction in laryngology, and also in otology, was to be compulsory, and so that important point had already been attained.

The PRESIDENT of the Laryngological Section, Dr. MIDDLEMASS HUNT (Liverpool), thought that the establishment of paid assistantships or fellowships in connection with the various clinics throughout the country would enable men to devote a longer time to training themselves before entering on special practice. The short time which many gave at present was largely a question of expense. Men could not get the prolonged training advocated by the openers of the discussion unless they possessed private means. He did not think the examination test was reliable as to a man's fitness for practical work, and he deprecated the multiplication of diplomas and degrees.

Dr. HERBERT TILLEY (London) agreed with Sir StClair Thomson that the specialist was born, not made, and for any special line in medicine or surgery to secure the respect of the general profession, those who elected to work in it must necessarily have had a good training in general medicine and surgery, and then by their own good work so advance the knowledge in their speciality that they would command the honour and goodwill of the general profession. Speaking from personal experience, he said that the two to three years which he spent in general medicine and surgery had proved to be of incalculable value in enabling him to view any special case in true perspective. In University College Hospital, London, each student was compelled to work for three months in the ear and throat and other special departments, so that they, at least, might learn to know how to examine a case, familiarise themselves with instruments and apparatus, and above all recognise the difference between the normal and pathological. It soon became evident to the teacher which of the students had a natural liking for the work or were possessed of manipulative skill, and from those he chose his assistants, who afterwards might give their attention solely to this special work.

MR. WAGGETT (London) associated himself with Sir StClair Thomson in the view that the genuine expert specialist was made not by diploma but by a process of natural selection, and he thought that the committees which nominated for hospital appointments formed the chief instrument for the advancement of that natural process. The bulk of their work upon the throat and ear was such as could and should be dealt with by any fully qualified practitioner, and it was of the utmost importance that the test in these subjects in the pass examinations should be genuine, just as for a long time had been the case in obstetrics and ophthalmology. If the general practitioner acquired a knowledge of these particular subjects he would see to it that the pseudo-specialist would in the future have but little field for practice.

MR. MACLEOD YEARSLEY (London) said that before reaching the ideal of Dr. Watson-Williams much spade work had to be done and much ground to be prepared. It seemed to him that the question, in this country at any rate, was largely one of evolution, and, if they were to educate adequately those of their students who were to become the specialists of the future, they must begin by training those who intended to be general practitioners only. For this otology and laryngology must be made compulsory subjects and must be included in examinations for qualification. The teaching should be confined to general principles. This would have the advantage of coming at the best time, when the student's mind was plastic. This would be better than post-graduate teaching, which, in this country, was open only to those who had time and money to devote to it. Once it was appreciated that instruction in otolaryngology was an indispensable part of the education of a general practitioner, and the necessity for such education was recognised by the licensing bodies, the way for the education of the specialist would become more easy.

DR. ANDREW WYLIE (London) did not think that several of the speakers understood that the subjects of laryngology and otology were compulsory in the medical curriculum, and therefore those laryngologists who did not get a proper position in their hospitals should demand it. The teaching of the special subjects in London and, he hoped, in the provinces was excellent—in fact, superior to that abroad. Their clinics were excellent and their material ample. He personally had not found better clinics either in Berlin, Vienna, or Paris, but in this country they were very defective in their pathological departments.

The PRESIDENT of the Otological Section, MR. HUGH JONES (Liverpool), agreed with Mr. Woods that the training of the eye and hand were of very great importance.

DR. MYGIND, in reply, said that it had been his experience that the practical education of the specialists in oto-laryngology in many English polyclinics was excellent, and many foreign specialists had, like himself, received an important part of their education here. If there were serious defects to mend, he thought it important to begin reform work in the education of the student.

DR. WATSON-WILLIAMS expressed his gratification at the unanimity of opinions elicited on the more important matters submitted for discussion, although on some points in his paper some misapprehension had arisen. Dr. Permewan had summarised in one sentence the purport of his opening remarks—namely, that the specialist should be placed on the same footing as the physician and surgeon. The question of having a distinctive qualification required further consideration, and indeed was a minor matter compared with the importance of ensuring full and sys-

tematic training. But at the present moment the University of London, for instance, enabled its graduates to take their further and full degree in many special subjects, namely, State medicine, gynæcology, mental diseases, pathology, odontology—and the principle might be extended to their own special branches. At any rate, in this country the only way of getting regulations laid down governing a course of study was through a university or other corporate body granting degrees or diplomas. It had been suggested that requiring five years to elapse after qualifying for practice before the distinctive qualifications of a specialist was conferred would involve the candidate in too much expense. But if the tentative suggestions he had made were adopted the candidate would still have the same opportunities for practice as he had now, and he could pass all his examinations, if he wished, two years only after becoming qualified. He (the speaker) felt, however, that it might be advisable to ask for fuller clinical experience, and, after all, it was not so very unreasonable to expect general medical and surgical experience, and the acquirement of a masterly knowledge of the speciality should extend in all to five years before a practitioner obtained a specialists' highest qualification, particularly if scientific research and investigation took the place of examination.

Dr. BIRKETT felt that the fundamental principle in the education of the student himself. Regarding the opinion expressed against legislation, it must be borne in mind that this was only meant to apply to Canada, and the idea was to protect the profession against those individuals who saw fit to enter this special field of work by an extremely short route.

SECTION OF OTOTOLOGY.

Dr. HUGH E. JONES (*Liverpool*), *President, in the Chair.*

The PRESIDENT, in welcoming the members of the Section, took the opportunity to advocate some sort of scheme for forming a collection of material upon which young otologists could work. The committee of the Royal Society of Medicine were considering this question. It was of the utmost importance that every young otologist should have material to work on.

Discussion on Acute Suppurative Otitis Media; its Neglect and Proper Treatment.

I. Dr. R. H. Woods (Dublin) said that whatever cause starts the infection which leads to acute suppurative otitis media the clinical course is constant, varying only in severity, and this, in its turn, is directly proportional to the rapidity of the onset. After the antro-tympanic cavity was affected the next event of importance was obstruction of the outer end of the Eustachian tube where it lies in the bony canal. This hindered or prevented the inflammatory products from draining away through the Eustachian tube, and directly favoured rupture of the tympanic membrane. The process might occupy days, or progress to the complete destruction of the membrane in a few hours. Fulminating cases were only met with in acute fevers, especially measles and scarlatina. The fluid discharged through the membrane, serous at first with but few bacteria and pus-cells, became in a day or two more purulent and richer in bacteria, although these bacteria belonged to only one single type. For the

chief difference between acute and chronic suppurative otitis was that in the former the infection was mono-microbial, while in the latter it was poly-microbial. If the original simple infection is prevented from becoming a mixed infection the disease subsides like an acute cold in the head. Contamination from the meatus, however, on the other hand, will prolong the process, and the introduced organisms are not destroyed, but only a cultivated tolerance of the invaders results, and with it the chronic disease. Thus chronicity is preventable. These opinions were formed by the speaker in consequence of investigations made by him in the Hardwicke Fever Hospital, Dublin, when he came to the conclusion that "it requires in an ordinary case little more than elementary cleanliness in order, by preventing this epi-infection, to ensure that the inflammation may subside and the membrane heal in a few weeks, leaving the patient little, if any, the worse in health or hearing." The routine treatment adopted was syringing every patient's ears on admission with 1 in 60 carbolic lotion. If suppuration occurred the discharge was syringed out twice daily or oftener, and boric powder insufflated or bor-alcohol instilled, with the result that, as Dr. Coleman, physician to the hospital, stated in May, 1912, "of late years I cannot call to mind a single case in which the patient left the hospital with the ears 'running.'"

There are two exceptions to this bacterial change as the cause of chronic disease: the one in which the ossicles are necrosed from the start—when, however, the process is complicated by the presence of a foreign body—the necrosed ossicle; the other, tuberculous otitis, which is chronic from the beginning.

Dr. Woods criticised the use of hydrogen peroxide in any but the mildest strength, since it was prone, by infiltrating the tissues and setting up surgical emphysema, to lead to dangerous dissemination of the infection.

Children have a tendency to finger the meatus when they feel discharge there, a practice apt to favour polysepsis. For this reason a cotton or linen cap should be tied over the auricle. In conclusion, the speaker sketched out the treatment to be adopted in the early stages of the disease prior to the rupture of the membrane.

II. **Dr. Claude Rundle** (Superintendent, Fazakerley Hospital, Liverpool), with regard to the frequency of otitis media in the course of the exanthemata stated that the incidence in the fever hospitals of the Metropolitan Asylums Board was 15 per cent., and at the Liverpool Fazakerley Hospital 9 per cent. This difference the speaker attributed to the absence of routine throat and nose treatment during the acute stages of the disease in the latter institution. Intra-tympanic medication was unsuccessful and routine syringing seemed even to prolong the course of otorrhoea.

With regard to treatment he found paracentesis rarely called for. Removal of tonsils and adenoids during the early stages of an infectious fever he regarded as unjustifiable. Pus retention in the antrum called for the Schwartze operation. When acute otitis media accompanies pharyngeal inflammation he found horse serum—preferably diphtheria antitoxin serum—of greater value than the combined effects of other measures.

III. **Dr. Gustav Alexander** (Vienna), discussing the aetiology, said that bacteria were found sometimes in pure culture and sometimes mixed. After dealing with the symptoms and diagnosis of the disease he proceeded to describe the treatment he adopted. During the early stages the local application of cold by ice-bags or Leiter's tubes was beneficial.

Failing success by conservative measure paracentesis was called for. This operation he performed under local anæsthesia induced by a novocain-adrenalin or cocaine-adrenalin solution, in the external meatus. After the operation strips of gauze soaked in warm solution of aluminium acetate or 1 per cent. alosol were inserted into the external meatus, a damp dressing was applied to the ear and the patient put to bed. Pain should cease, and within three or five days the temperature should fall to normal. The damp dressing was useful in preventing pus-retention; the gauze strips were removed with sterilised forceps at longer or shorter intervals according to the amount of discharge. Syringing (with warm sterilised water) he only employed if the discharge was thick and ropy. By the end of the first week the thickening of the discharge rendered the use of the gauze inapplicable, he then instilled hydrogen peroxide (3 to 6 vols. per cent.) two or three times a day. Politzerisation was useful in blowing out pus and in improving the hearing. Care should be taken to avoid the occurrence of eczema in the meatus. Early paracentesis was especially called for in the acute otitis media of sucklings. He concluded by citing the results of the administration of urotropin in the disease obtained by Dintenfass, of Vienna; $7\frac{1}{2}$ gr. of urotropin were given by the mouth four to six times daily. In most of the cases formaldehyde could be demonstrated in the ear-discharge. It was found that markedly beneficial results occurred in chronic suppuration unless necrosis of bone was present. In many cases the discharge ceased in eight days. If no effect is obtained in a week the drug should be stopped. In acute otitis media the duration of the disease was shortened by one half. Benefit was also obtained in recurrent middle-ear suppuration. In the exanthemata large doses lessened the tendency to acute middle-ear disease. Children required $7\frac{1}{2}$ gr. doses twice daily; adults the same four to six times daily. He advised its use also in otitic meningitis. He had found autogenous vaccines of some use, but not as a substitute for operation.

Professor HOLGER MYGIND (Copenhagen) said that opinions as to the proper treatment of acute otitis media had always been different, perhaps principally because the vast majority of cases of this disease recovered without treatment. The inflammation of the tympanic cavity might be stopped at its first stage by putting the patient to bed and making him perspire. As soon as the posterior part of the drumhead bulged forward a large incision ought to be made. As soon as the drum was perforated, the speaker introduced into the auditory meatus a sterilised plug of cotton. The patient was then advised to remove the plug when it became soaked with secretion, and apply a new one with a sterilised instrument. Patients recovered more quickly and suffered less from complications when treated by this method than by the instillation of antiseptic fluids or syringing.

Professor WM. L. BALLENGER (Chicago) said that though chronic inflammation was attended by polybacterial flora, it did not necessarily follow that this was the cause; it might be a phenomenon incidental to some pre-existing condition which was the predisposing cause, the mixed infection being an accessory cause. He had observed in nasal infection that if there was no obstructive lesion the inflammation was usually acute, whereas if obstructive lesions were present the inflammation tended strongly to become chronic in type. The same principle applied to otitis media. The chronicity depended not only upon the polybacterial flora, but also upon a greater degree of Eustachian obstruction, from enlarged and inflamed adenoids. As to the treatment, a 10 per cent. solution of

carbolic acid in glycerine dropped into the meatus daily would in the first or catarrhal stage abort the process. If there was bulging of the membrana tympani incision must be performed. After purulent discharge was established he placed a small strip of sterilised gauze into the meatus, the distal touching the perforation, the proximal end in the concha. The gauze should not be folded in the meatus, as that would interfere with drainage. The meatus was mopped with several small cotton-wool applications, or until the cotton remained dry. He then inserted the gauze strip or wick, renewing it while the discharge was profuse two or three times daily, after that once daily. He used no powders or liquids. He occasionally resorted to measures calculated to promote the reactions of inflammation. Among the measures useful for this purpose were leeches, artificial leeches, scarification, counter-irritation, heat, etc. Leeches had frequently been of the greatest value in aborting an early otitis and mastoiditis.

Mr. ADAIR DIGHTON (Liverpool) could not agree that at the present time myringotomy in every case of acute otitis media with a bulging drum membrane was necessary. Recently he had treated a number of these cases by painting the Eustachian tube, under the guidance of the naso-pharyngoscope, with a weak solution of silver nitrate, and had found this equally satisfactory, as one painting usually had the desired effect of relieving the pain and terminating the disease. If one painting was not sufficient he had found a second painting all that was required. He suggested that by means of dry cleaning of the ear with cotton-wool mops, and placing the patient in such a position that he lay upon the diseased ear, drainage by means of gravity was favoured. All the good results of cleansing and drainage were thus retained with none of the obvious dangers of syringing a discharging ear. He thought that the postural treatment was only common sense, as in the position of the patient on the diseased side all pus would drain by gravity through the perforation, and would leave the mastoid antrum unaffected. Also there would be less danger of a unilateral otitis media developing into a bilateral otitis media by extension *via* the Eustachian tubes and naso-pharynx, as would be likely to happen if the patient were allowed to be on the healthy side with the diseased ear uppermost.

Dr. WM. MILLIGAN (Manchester) fully endorsed Mr. Wood's statement to the effect that acute suppurative otitis media was a monomicrobial infection, whereas in chronic conditions a variety of organisms were present. A mixed infection he therefore considered to be evidence of chronicity. The underlying idea in the treatment of acute suppurative otitis media should be the provision of free drainage with a minimum amount of interference. The principle of physiological rest to the inflamed organ should not be lost sight of. He agreed with Professor Mygind that it was better to perform a paracentesis too early than too late. He had never seen any damage by a paracentesis, whereas he had seen a great deal of damage done from the want of one. He was in favour of dry dressings, as he considered the tissues, when suppurating, were already in a water-logged condition, and therefore the use of fluid remedies tended to increase the already existing œdema. A continuance of discharge for any length of time after the provision of free drainage was evident. This might be unaccompanied by any evidence of tension or of external indications of mastoid disease—in other words, the antral mucous membrane was infected and required the same free drainage as had already been provided for the cavity of the middle ear. Under such circumstances, he was strongly in favour of the performance of a simple opening of the

antrum to drain the posterior end of the middle-ear cleft. He could not see what possible effect painting the naso-pharyngeal end of the Eustachian tube with nitrate of silver could have. The inflammatory process in these cases invaded the whole tubo-tympanic axis, and for practical purposes the Eustachian tube was sealed up as the result of swelling of its mucous membrane.

Dr. KERR LOVE (Glasgow) thought that opinion and discussion should range round the following points: (1) When to open the membrane; (2) whether syringing or treatment by the dry method was the better practice; (3) whether inflation should be practised after opening the membrane, and if so, how soon; (4) when interference with the naso-pharynx was justifiable after myringotomy. He thought syringing was undesirable, because in any case the fluid did not reach through the membrane to the middle ear. No operation on the naso-pharynx was justifiable during the acute stage of the middle-ear suppuration.

Dr. WATSON-WILLIAMS (Bristol) considered that the general consensus of opinion was essentially early and efficient drainage. He associated himself with the view that early myringotomy was desirable if the inflammatory trouble was not obviously transient. If there was evidence of mastoiditis they were only carrying their principles of early and efficient drainage to a logical conclusion by opening up the mastoid cells and antrum. Without being unduly precipitate, he had no hesitation in advocating the simple mastoid operation (Schwartz) being performed relatively early. He, of course, deprecated anything in the nature of a complete radical operation in the class of case under discussion unless very exceptional and complicating conditions made it imperative.

Professor HOLGER MYGIND said that, though very conservative towards radical operation, his indications for simple mastoid operations were very wide. The simple mastoid operation ought to be done very thoroughly. It was not sufficient alone to open the antrum mastoideum, every cell filled with pus ought to be opened and every softened bony tissue removed; destruction of bone was not infrequently found in the depth under normal tissue. In a long series of such cases he had used secondary suture and healing under blood-clot with very satisfactory results.

The PRESIDENT, in summing up, remarked that there was a consensus of opinion in favour of performing early paracentesis. He had found with Professor Alexander that gauze drains were extremely useful so long as they could absorb the discharge, but when the pus became thick they had to fall back on syringing. With reference to Professor Mygind's operation of secondary suture after the incomplete mastoid operation, he himself had found that the period of filling up was very prolonged, and so he had adopted a similar procedure with good results.

Mr. WOODS, in reply, said that, in regard to Mr. Adair Dighton's method of treatment with silver nitrate, he must agree with Dr. Milligan that it was futile. There was not much to be said in regard to posture; it seemed to him to make very little difference either way. He thought that the discussion on the comparative merits of the wet and dry methods of treatment was somewhat laboured. The important thing was to keep the middle ear monoseptic; how that was to be done was a matter of secondary importance. His own opinion was that washing out was more likely to prevent decomposition. Syringing was done not with the object of washing out the middle-ear cavities, but to remove pus from the meatus, and thus prevent decomposition and infection of the middle-ear.

The Value of Decompressive Operations in Intra-cranial Complications of Otitic Origin, with special reference to the Treatment of Otitic Meningitis.—Dr. W. Milligan (Manchester).

—The earliest signs of meningitis are increase of blood pressure, papilloedema, and persistent headache, the existence of which should lead to a chemical and microscopical examination of the cerebro-spinal fluid. The chemical changes brought about by meningitis are a change in the reaction of the fluid from alkaline to acid, and disappearance of the copper-reducing substance (dextrose): the latter, especially, being an important early sign of oncoming meningitis. These changes, together with the presence of albumen and excess of globulin, indicate definite bacterial invasion of the meninges and call for operation.

After elimination of the primary focus in the ear, extensive decompression should be secured in the temporo-sphenoidal or cerebellar area, preferably the latter, as the meningitis is usually due to infection of the posterior fossa. The speaker had operated thus in 12 cases with the following results: 4 cases operated on *in extremis*, all died; of the remaining 8, 5 died and 3 recovered. This high rate will doubtless become lower as the means of early diagnosis are better known. The operations are conducted as follows: *Temporo-sphenoidal region*, an area of bone at least $1\frac{1}{2}$ in. square, is removed immediately above the external auditory meatus, and the dura corresponding to the bone wound entirely removed. Herniation of the brain results, but the larger the bone wound the less is the hernia; *in the cerebellar region* the opening is made between the curved lines of the occiput as low as possible so as to secure free drainage. Haynes, of New York, has lately suggested draining the cisterna magna by removing a triangular area of bone above the foramen magnum so as to insert a drainage-tube between the lateral lobes of the cerebellum. Similar decompression measures are advisable in cases of brain abscess after evacuation, the tendency in the past having been to restrict too much the size of the opening in the skull-cap.

Professor MYGIND had operated upon a large number of cases of meningitis of which about one fourth recovered. He had given up incising the dura on account of hernia of the brain, save in cases of pachy-meningitis or brain abscess.

Mr. E. MALCOLM STOCKDALE had treated otitic meningitis by repeated lumbar punctures, but none of them recovered. He related a case of meningitis cured by operation.

Dr. MILLIGAN, in reply, dealing with Prof. Mygind's remarks, stated that he had never seen any evil results from herniation of the brain substance.

The Prevention of Deafness in Non-suppurative Cases.—J. Kerr Love (Glasgow).—After allusion to chronic middle-ear catarrh and otosclerosis and the necessity for further research upon these conditions, particularly with regard to heredity, the speaker suggested that the causes underlying the occurrence of adenoids should be investigated. The influence of heredity, of the feeding of children and of catarrhal processes in their formation should be determined. Slight deafness in childhood should be treated lest it prove the forerunner of severe deafness in adult life. The great rôle played by meningitis in the production of deafness made notification and treatment in hospital of all forms of that disease an imperative necessity. The prevention of congenital syphilitic deafness should be attempted by treating the parents, and the discovery of the disease in the parents was one of the benefits which would doubt-

less follow the application of the maternity clauses of the Insurance Act. True hereditary deafness in children was probably not very common; probably less than 10 per cent. of the deaf and dumb. At present, however, the subject was one that still required statistical study, and that could be accomplished by an agency like the Eugenics Record Office of the United States. In order to control this type of deafness the influence of education in warning the sufferers and their hearing relatives of their hereditary tendency might be relied upon. A discussion on heredity and disease took place at the Royal Society of Medicine three years ago. It occupied four meetings, but the heredity of deafness was never mentioned. It was possible that deafness in later life was hereditary as well as certain forms of congenital deafness, but there was no proof of a connection between the two.

Professor HOLGER MYGIND had found otosclerosis often complicated with chronic middle-ear catarrh and benefited by catheterisation. As regards epidemic cerebro-spinal meningitis he had seen, in Denmark, cases of acquired deaf-mutism springing up in a limited district during a short period and ascribed to brain fever, typhoid fever, pneumonia, etc., instead of to the true cause. He had little hope of preventing marriages between people belonging to deaf families. Little could be done to prevent non-suppurative deafness save when it was caused by adenoids, but in suppurative disease the chances were much better.

Mr. G. J. JENKINS (London) regarded heredity as a very dubious factor in the causation of deafness, and agreed with what Professor Mygind said regarding the prevention of marriages.

Mr. E. MALCOLM STOCKDALE asked Dr. Love whether treatment could stay the advance of congenital syphilitic deafness; in the cases he had seen the deafness was so severe that treatment was hopeless.

Mr. W. M. MOLLISON (London) regarded adenoids as due to nasal or naso-pharyngeal catarrh consequent upon mouth-breathing.

The PRESIDENT thought that adenoids were probably hereditary. Deafness was often one of the stigmata of degeneration, in which case it took the form of a mixture of otosclerosis, catarrh, and nerve-deafness. How could the principles of Mendelism be applied to a condition made up of so many different factors? As regards the treatment of chronic middle-ear catarrh, he regarded the continued attendance of patients at out-patient clinics as an indication that they obtained some benefit from the treatment.

Dr. KERR LOVE, in reply, said that true hereditary deafness was not accompanied by any other stigmata. The deafness of degeneracy should be carefully discriminated from it. He rarely saw otosclerosis without middle-ear catarrh. Regarding the treatment of syphilitic deafness, he had had very little improvement from salvarsan.

A resolution urging the appointment of an otologist to all fever hospitals was adopted and forwarded to the Council of the Association.

The Indications for the Schwartze Operation.—G. J. Jenkins, F.R.C.S. — The operation is only indicated when the auditory apparatus has not been seriously injured. In infections of the middle ear the process is, in most cases, confined to the lining membrane. But in very acute infections necrosis of bone is probably secondarily produced, most commonly of the outer attic-wall and of the descending process of the incus. A subacute course, with subsidence of the signs of otitis media, but with persistent mastoid pain and tenderness, with slight

evening pyrexia, may occur in resistant subjects. The disease, also, at times attacks the antrum without spreading to the mastoid cells. Some of these cases recover spontaneously, but others progress to perforation and the formation of a meatal fistula leading to the attic or antrum. The speaker had recently performed a Schwartze operation on these cases before perforation had occurred, removing the posterior part of the outer attic-wall, with complete recovery and satisfactory hearing.

The influence of severe infections on osseous tissue is conditioned by certain anatomical facts elucidated by Mr. A. Cheate. Between the antrum and the mastoid cortex is a group of fine processes enclosing long narrow spaces, which are called "the foetal antral cells." These cells sometimes also extend to the posterior part of the outer attic wall. Severe inflammation of the mucous lining causes necrosis of the whole or part of this region. Sequestra so composed are frequently encountered. The local phenomena in this condition vary according as mastoid is cellular or not. If it is cellular the usual coarse external signs of mastoiditis will be present. If, as in the infantile or diploëtic mastoid, the outer antral wall is dense external to the foetal cells, the external signs of mastoiditis will be slight or absent. With the aural speculum, however, in such cases, a bulging of the postero-superior part of the meatal wall, with or without perforation of the membrane, can be seen.

The acute condition subsiding and no serious complications arising, this localised necrosis of bone will lead to chronic otorrhœa. The indications of this lesion are as follows: (a) There is a history of severe septic infection, as with scarlet fever or measles; (b) the position of the perforation of the membrane is posterior, superior, or through the outer attic-wall; (c) pus may be aspirated from the attic or antrum under inspection with a Siegle speculum; (d) the persistence of a perforation after the discharge has apparently ceased, with the recurrence of discharge after a period of quiescence; (e) a diploëtic or infantile mastoid. The type of mastoid may be ascertained by the X rays, by transillumination, or by the condition of the mastoid of the opposite side (if it has been operated on).

In these cases, if after three to six months of expectant treatment, the disease persists, the speaker advised the Schwartze operation. The time-limit to be adopted was a matter of some dubiety. Most of the bone injury occurs at the earliest stage of the infection, and it is not wise to permit the septic discharge to bathe the ossicles for too long a period. Fistula of the attic or antrum could be prevented by early Schwartze operation.

Dr. KERR LOVE opened the antrum in all doubtful cases.

Mr. E. MALCOLM STOCKDALE found it difficult to decide when to open the antrum. If the discharge was so profuse that it could not possibly have been secreted by the antrum then a mastoid operation was indicated.

Mr. W. M. MOLLISON did not think that the quantity of discharge of any importance in deciding the question of operation. Transillumination he had found of very little value.

The PRESIDENT held that the difficulty of determining whether or not the incus was sound, rendered the decision whether to perform a Schwartze or the radical operation hazardous. He asked whether removal of the outer attic wall affected the movements of the ossicles.

Mr. JENKINS, in reply, said the amount of discharge was no clue to the extent of disease. The Schwartze operation was valuable, not only because it provided drainage, but also because it removed diseased tissue.

AUSTRIAN OTOLOGICAL SOCIETY.

April 29, 1912; Monats. f. Ohren., year 46, No. 6.

DR. ALEXANDER *in the Chair.*

Abstract of Report.

Intact Fluid Portion of the Labyrinth with Disease of the Nerve-endings or of the Nerve itself.—H. Neumann.—A man, who was under treatment in 1903 for chronic adhesive processes associated with deafness in the left ear and almost normal hearing on the right side, had now gradually become completely deaf. Rotation also now produced no result, but a response was obtainable with the caloric test. This state of affairs was usually found in cases of hereditary syphilis before the labyrinth function was yet completely lost. (In this man, however, the Wassermann reaction was negative, and he had healthy children.) As an explanation, Neumann submitted that the caloric stimulus was stronger than the more physiological action of rotation, and that accordingly, in a certain stage of disease, the former test might evoke a reaction—although this might be only a weak one—where the latter would fail to do so.

BÁRÁNY considered the account most interesting, and stated that he had not yet met with a similar instance. In cases of fistula, as was known, the conditions were reversed—the caloric response disappearing first, and then the reaction to rotation. Of course the caloric test could be used to obtain a long-continued effect, whereas rotation was preferable when a sudden stimulus was required.

NEUMANN did not agree that the reaction to caloric test was weaker than that of rotation, as Bárány would seem to imply in his reference to cases of fistula, since the differences to which he alluded might well be due to the fact that, whereas the caloric test could be applied to one side alone, in the rotation test the sound side could never with certainty be excluded, and he reminded them in this connection that a spontaneous nystagmus would sometimes be influenced by the caloric test when rotation would have very little or no effect. He had attempted to investigate these points more definitely by applying the caloric test during rotation, but had found the results unreliable, since with the head in the erect position, rotation influenced the horizontal, and the caloric test the superior vertical, canal.

Slowly-growing Tumour of the (?) Cerebello-pontine Angle.—

O. Beck.—A man, aged thirty-nine, under continuous observation for two and a half years. When first seen, right ear and labyrinth intact; left ear completely deaf, tympanum intact, tinnitus. Response to cold and hot caloric test very weak but present. Rotation normal; no spontaneous nystagmus. Condition in the left ear remained thus for a year. Ocular fundi normal, other nerve examination negative. Then without any other symptoms the caloric reaction was completely lost, and the duration of the after-rotation nystagmus gradually became less. Two months ago the patient complained that his gait had become uncertain,

and that he had at times attacks of giddiness. Examination now showed: Right side normal as before, left side deafness. Marked spontaneous oscillatory nystagmus on looking to the left, otherwise none. Duration of after-rotation nystagmus—10 times to the right, 8–12 secs.; 10 times to the left, 12–15 secs. Ocular fundi normal. Spastic paresis of left leg. Babinski, left. Weakness of the left facial, especially the buccal branch. Hypæsthesia of right cornea, anæsthesia of the left.

An accurate diagnosis was certainly difficult, but although as yet no optic neuritis had appeared the exhibitor considered that the lesion was probably a slow-growing tumour in the cerebello-pontine angle.

Paradoxical Galvanic Reaction in a case of Left-sided Chronic Suppurative Otitis Media with Fistula.—Hofer.—The radical operation was performed on the left side in a woman, March 5, 1912; examination on the 14th of the following month gave the following result: Right ear, hearing almost normal; dry perforation. Left, wound convalescent. Hearing, $2\frac{1}{2}$ m. for cv., $\frac{3}{4}$ m. for Whp. (tested with noise apparatus). No spontaneous nystagmus. Fistular symptoms still present typically, *i. e.* quick component to the diseased side on compression. Rotation, 10 times to the left, nys. to the right lasting 32 seconds; 10 times to the right nys. to the left lasting 30 seconds, *i. e.* no appreciable difference. Reaction to the caloric test rather more brisk on the healthy side; duration about equal on each side. Cathode left: rot. nys., L. very marked. Cathode on both sides, rot. nys., L. very marked. Cathode on the right side, rot. nys. L. ! ! !. Anode on the left side, rot. nys. R. Anode on both sides, rot. nys. R. Anode on the right side, rot. nys. R. Breaking the current reversed the nys. in each case. These results were repeatedly tested and found constant. Pointing reaction of Bárány normal, *i. e.* deviation in the opposite direction to the nystagmus. The paradox lay in the fact that the nystagmus occurred in the opposite direction to that normally obtained. Four ma. were used, but the effect could be elicited easily with only 2 ma.

By April 23 the normal galvanic reaction replaced the usual response, and later the fistula symptoms disappeared.

Hofer suggested that the fistula allowed the current such easy exit and access that its major effect was concentrated on the diseased side.

Bárány had never seen an instance of this phenomenon nor knew of any description hitherto published. In this case, which he had examined with Hofer, if the cathode were placed on the healthy side and the anode on the forehead, nystagmus occurred towards the diseased side. It was interesting that the disappearance of the paradoxical condition synchronised with the closure of the fistula. Babinski had repeatedly pointed out that in cases of unilateral ear disease, the passage of an electrical current, irrespective of the relative position of the electrodes on the head, produced a leaning of the head towards the diseased side.

Ruttin stated that he had described some cases of paradoxical galvanic reaction in which nystagmus occurred towards the healthy side some years ago at the Basle Congress.

Post-Traumatic Deafness Left with Destruction of the Vestibule Right.—F. Hofer.—A man, aged twenty-five, sustained severe concussion six years ago in a tramcar accident, and lay for twenty-one days unconscious. For the next two years he suffered with headache and giddiness but now for the last four years had felt quite well. As a boy

he had had a box on the left ear, and always heard worse on that side since.

Examination.—Right, *Læsis auris internæ*, hearing reduced to Cv. $1\frac{1}{2}$ m., and Whp. ad conch. (tested with noise apparatus). No spontaneous nystagmus, prolonged cold caloric test unresponsive right, but after forty seconds irrigation of the left ear marked rotatory nystagmus to the right was induced lasting four minutes with giddiness. Galvanism evoked neither nystagmus nor giddiness in any way. Rotation to the right and left produced nystagmus to the opposite side of about equal duration, but weaker than normal.

Thus the vestibular nerve was destroyed on the right, whilst on the left side the cochlea nerve remained functional, but the reaction of the vestibular nerve was depreciated; this was the result presumably of labyrinthine concussion. Although there was no evidence of syphilis this could not be absolutely excluded as the patient declined the Wassermann test.

The Diagnosis of Tumours in the Posterior Fossa.—Ruttin.—

A man, aged thirty-four. History: Said to have been deaf on right side since childhood. Giddy for two years, tinnitus for one year, headache for seven months, blind for three months. Married, four children, one alive and healthy, three died of "water on the brain." His wife has had no miscarriages; 1894, pneumonia: 1901, joint rheumatism: 1903, gonorrhœa.

Examination.—Eyes, secondary atrophy, both sides following optic neuritis. Blindness. Wassermann negative.

Nervous system: Alteration of pulse with alteration of position. Left side trigeminal hypalgesia, ataxia, Babinski. No facial paresis. Ears: Mem. tym. normal. Hearing: Right normal; left absolute deafness to speech and forks.

Spontaneous nystagmus, horizontal—to the right on looking to the right, to the left on looking to the left—fairly marked—otherwise directed to the left in coarse movements. No nystagmus appeared behind opaque glasses.

Spontaneous deviation slightly perhaps towards the left with the right hand. No spontaneous deviation in the wrist joints.

Equilibration: Slight tendency to fall towards the left unaffected by turning the head to the right or left, but much accentuated if the head were bent backwards.

Caloric reaction; Left negative, right very active. Typical deviation of both arms to the right and tendency to fall to the right. Head rotated to the right, falling more backwards. Head to the left, falling more forwards. Head bent forwards, falling more backwards. Head bent back, falling more forwards. The test produced no giddiness, vomiting, or even nausea.

Rotation: To the R. nys. → L. 20 seconds, no giddiness, vomiting or nausea. Typical deviation. To the L. nys. R. ← 20 seconds, slight giddiness, no vomiting or nausea. Typical deviation. Rotation to the right with the head bent to the right, nys. ↓ 10 seconds, no giddiness. Rotation to the left with the head bent to the left,¹ nys. ↑ 11 seconds, no giddiness. Rotation to the right with the head bent forwards, nys. rot. L. 14 seconds. Rotation to the left with the head bent forwards, nys. R. rot. 14 seconds.

Galvanic tests.—Anodes separated, cathode on forehead, nys. rot. L. Cathodes separated, anode on forehead, nys. R. rot. Cathode left, anode

¹ ? Misprint for "right."—A. R. T.

on forehead, no nys. Cathode right, anode on forehead, nys. R. rot. Anode left, cathode on forehead, nys. rot. L. Anode right, cathode on forehead, no nys.

The result of the various examinations therefore pointed to the presence of a tumour at the cerebello-pontine angle. The cochlear, vestibular, trigeminal and vagus were affected; the facial was intact. How much was due to the tumour and how much to its remote effect could not with certainty be determined. It was especially interesting that in spite of the complete destruction of the posterior vestibule (negative reaction to the caloric and galvanic tests) the rotation response appeared the same on each side. A compensatory condition would naturally be suggested to explain this, against which hypothesis, however, the following observations stood in opposition. As he (Ruttin) had pointed out, no compensation occurred in respect of vertical nystagmus, a fact which confirmed what they had first supposed on theoretical grounds. This compensation they had regarded as due to the establishment of an equalisation in the effect of the movements of the labyrinthine fluid past the ampullæ, a condition which could not take place in the posterior vertical canals, as the fluid in these during rotation was influenced in the same direction simultaneously on both sides.

As the result of a large number of examinations he had ascertained the following data: Normal rotation with the head erect—to the right, nys. → L. 15–30 seconds; to the left, nys. R. ← 15–30 seconds. Rotation with head erect and, *e.g.* the right labyrinth destroyed and uncompensated, to the right, nys. → L. 15–30 seconds; to the left, nys. → L. 3–8 seconds; or, with the right labyrinth, *e.g.* destroyed but compensated, to the right, nys. → L. 10–15 seconds; to the left, nys. R. ← 10–15 seconds.

The same result, in a lesser degree, would hold good for the caloric test.

On the other hand, the mean of the results he had obtained as regards vertical nystagmus were: Normally, right rotation with head bent to the right, ↓ 10–16 seconds; with head bent to the left, ↑ 5–8 seconds.

Thus, *normally*, there is a constant and appreciable difference in the duration of the nystagmus produced in this latter method, the upward directed movement being always shorter than the downward nystagmus. Cases, however, did occur in which the labyrinth on one side had been destroyed giving results equal to those obtained in normal people, both where compensation had and had not taken place, but that as regards vertical nystagmus no establishment of the compensation phenomenon would appear.

In the case at present under consideration the vertical nystagmus, both upwards and downwards, was of equal duration, a condition of affairs which could not be viewed as being related to that compensation phenomenon which occurred in connection with a peripheral destruction of the vestibular apparatus. Nor could it be looked on as due to a partial loss of function as was sometimes found, *e.g.* in cases of congenital syphilis where the rotation reaction was lost, whilst a response to the caloric test could still be obtained, since here not only the effect of the caloric but also of the galvanic stimulus was lacking. One could therefore diagnose the presence of some central lesion which resulted in the elimination of that subtle difference between the effect of the currents to and from the ampullæ in the posterior vertical canals.

The appearance of the compensation of the vertical nystagmus should be of importance in similar cases as regards determining the presence of tumour.

[A further account of this will be most interesting and important.]

Extraction of the Stapes.—Leidler.—During the removal of a polypus from the attic in a case of chronic suppurative otitis media the entire stapes (head, crura and footplate) was inadvertently extracted. Previous to the operation examination had revealed an advanced degree of deafness on the same side. Immediately after the extraction no alteration in the hearing and no evidence of labyrinth involvement could be detected, nor had any symptoms since (about two weeks) appeared. It would seem that it must have been merely the removal of an already exfoliated stapes.

BÁRÁNY had removed a polyp attached to the stapes intentionally during a radical operation. Hearing had been tested, fistular symptom and spontaneous nystagmus had been excluded beforehand. Afterwards a very lively fistular symptom could be elicited which lasted some six weeks, but there had been no spontaneous nystagmus or giddiness. Hearing was 6 m. for Cv. In this case the stapes can only have been slightly moved.

BONDY quite agreed that the stapes in Leidler's case was already exfoliated, as otherwise much trouble would probably have followed. He had once performed the radical operation in a case with the fistular symptom in which the canal was found intact, but pressure with a swab of wool over the region of the oval window produced the symptom. This was done several times in order to demonstrate to a large number of on-lookers. Suddenly the symptom could be no longer evoked. This he thought was due to a luxation of the stapes and an escape of fluid. After the operation the patient showed the usual symptoms of destruction of the labyrinth, *i.e.* giddiness, vomiting, and nystagmus towards the sound side. Hearing was preserved till the third day, when it disappeared. In spite of the then immediately performed labyrinth operation, the patient died of meningitis.

BÁRÁNY remarked that it was important to be sure that the tube was closed before concluding that no fistular symptom was present, and quoted clinical evidence in this respect.

ALEXANDER considered that the important point in the case was the negative result to the fistular symptom, which he regarded as due to the presence of fibrous tissue shutting off both the vestibule and cochlea.

Alex. R. Tweedie.

PROCEEDINGS OF THE AMERICAN LARYNGOLOGICAL, RHINOLOGICAL, AND OTOLOGICAL SOCIETY.

Eighteenth Annual Meeting, May 13, 14, and 15, 1912; Philadelphia, Pa.

Report by DR. L. M. INGRAM.

May 13.

(Continued from p. 512.)

Mastoid Sequestra containing all Three Semicircular Canals, with a Report of the Subsequent Labyrinthine Reaction.—Dr. J. M. Ingersoll (Cleveland).—The author presented the case of a girl, aged six, with evident mastoid infection on the right side. She had had scarlet fever two months before, followed by suppurative otitis media

dextra, headaches, nausea and dizziness, which gradually disappeared. Profuse, foul, purulent discharge in the right ear. Middle ear filled with granulation tissue. Swelling and tenderness over mastoid. No caloric reaction in right ear. No spontaneous nystagmus. No facial paralysis. Upon operation two sequestra, one composed of most of the mastoid cells, the other, the major part of the petrous portion of the temporal bone, including all three semicircular canals, were found. The recovery was uneventful, gradual compensation of the loss of the right labyrinth taking place. The average duration of the nystagmus after turning, when both labyrinths are normal, is thirty seconds. If one labyrinth has been destroyed, it has been supposed that the duration of the nystagmus, after turning, was shortened about ten seconds for the normal side and twenty seconds or more for the pathological side, and that the ratio of difference between the two was at least two to one.

In the case reported the nystagmus for the normal side has gradually returned to about the normal duration (twenty-eight to thirty seconds), and for the abnormal side to a little more than one half of the average duration (sixteen to seventeen seconds). The ratio of difference between the two sides has never been as great as two to one. Clinically, compensation is complete. The patient is apparently a normal child, with no dizziness or other symptoms of labyrinth trouble. Evidently the normal labyrinth is stimulated in the usual way by tests which affect that side, and less actively stimulated by the tests which would affect the other labyrinth if it were intact. In other words, although one labyrinth has been destroyed, the movement of the endolymph in either direction in the normal labyrinth causes stimulation of the labyrinth, and the labyrinth reaction is greater for the normal side than it is for the pathological side. Compensation was fairly well established two months after destruction of the labyrinth, and at the end of six months the difference in the duration of the nystagmus toward the right and toward the left, caused by the turning test, was often less than ten seconds, or no greater than the difference which may be present when both labyrinths are normal.¹

Dr. GEORGE F. COTT (Buffalo) cited the case of a child, aged twenty months, who had a fetid discharge from the ear and facial paralysis. With a sharp spoon he cleaned out the necrotic tissue, intending to do a subsequent facio-hypoglossal anastomosis. The internal ear was entirely destroyed, so that the semicircular canals or cochlea could not be recognised. He left only a shell of the petrous bone. The patient's parents refused further operation.

Studies in Meningitis.—Dr. Samuel J. Kopetzky (New York).—The general conclusion is stated in the beginning, that all the symptoms that characterise meningitis are due fundamentally to common factors, whether the invading bacteria be one or another of the various organisms found standing in causal relationship to the lesion. The poisoning of the central nervous system by the invasion of microbic organisms and the action of enzymatic ferments plus the products of brain metabolism result in an acidosis of the tissues involved, producing an increased tension of the cerebro-spinal fluid with disturbances of its normal circulation. Relief of the symptoms may be accomplished by relieving the heightened intra-cranial tension and combatting the general effects of the action of the poisons on the central nervous system. The clinical symptoms of the disease were analysed. The significant features of

¹ It should be noted that the above findings applied only to rotation tests.—Ed.

brain compression, brain anæmia, etc., relative to the problem of intracranial tension in meningitis were considered, and animal experiments on cerebral anæmia detailed.

From the evidence thus adduced the following deductions were made: (1) That there is an analogy in the symptoms exhibited by brain compression, and by those brought on by the meningeal tissue reactions to microbic infection. (2) That the infection of the central nervous system, particularly in the investing membranes of the brain, results in an increase in the tension of the cerebro-spinal fluid with functional disturbances of the vagus, the vaso-motor, and the respiratory centres. (3) That these symptoms dominate the clinical picture of meningitis, modified to some extent by other factors. (4) That evidence of the increasing tension is obtainable by repeated manometric measurements of the blood-pressure, by the systematic and repeated study of the fundus of the eye, the results of lumbar puncture, and observation of the character and rate of respiration at the bedside.

In the production of increased tension of the cerebro-spinal fluid, the œdema of the brain-tissue itself, in addition to an œdema of the tissues of the investing membrane, is the principal factor. The former impinges on the available space in the cranial vault, and the latter interferes with the free circulation of the cerebro-spinal fluid.

The evidence produced shows that the predominance of the pressure symptoms as found in meningitis is, in a large measure, due to œdema of the cerebral and meningeal tissues. This œdema is the result of an acidosis, evidenced clinically by the varying degree of acidity found in the cerebro-spinal fluid, and although no attempt is made to correlate the degree of pressure symptoms to the degree of acidity found, yet the latter seems to bear a definite relationship to the former, and, finally in the cases which clinically present the more stormy picture of disturbances of the sensorium, larger amounts of lactic acid are demonstrable in the spinal fluid.

The author next considers the bacterial activity in meningitis in relation to the resultant tissue reactions; the early disappearance of the carbohydrate element in the spinal fluid, the cause of this, its effects on the patient, and its significance as the earliest sign of distinct value in diagnosis. The conclusions drawn from this phase of the study are: The result of pathogenic bacterial growth in the central nervous system is evidenced by the *early* disappearance of the carbohydrate element in the cerebro-spinal fluid, and the presence in its place of nitrogenous products, the result of tissue destruction. These two factors, particularly the latter, produce the symptoms of general intoxication which, in addition to the pressure symptoms, make up the clinical picture of meningitis.

There follows a short study of the metabolism of the central nervous system in relation to the recognition of decomposition products of cellular elements (penultimate and ultimate products of lecithin destruction), ptomaines, and the relation of such products in the spinal fluid to the symptoms of meningitis.

Summarising the evidence up to this point, it is found that, due to bacterial activity plus the factors discussed in the preceding sections of the paper, there exists in meningitis a decomposition of the lecithin molecule element in the nervous tissue. The evidence of this is present in the cerebro-spinal fluid through the finding in it of larger quantities of choline than the amount which is determined the normal minimal trace. From the evidence presented by detailed investigations of this alkaloidal body it seems to be the factor in the clinical picture which clinicians

have come to regard as the "poison-effects" of the disease. The increased quantity of choline in cerebro-spinal fluid of meningitis is not the result of gross destruction of the lecithin constituent of gray matter in the brain so much as it is another evidence of the stasis of circulation of the cerebro-spinal fluid, with the result of an accumulation of the products of cell metabolism, because the mechanics of elimination are interrupted. This is shown by the decrease in its amount and the absence, or disappearance, of the toxic-poisoning effects later, when the patient begins to recover.

The Surgical Treatment of Meningitis.—Irving S. Haynes (New York).—The paper contained a description of the operation which he has devised, its scope and its objects, and case reports. The purpose of the operation—drainage of the cisterna magna—are: (1) To open the cisterna magna, relieve intra-cranial pressure, and restore the normal supply of blood. (2) To do this without danger of "corking up the foramen magnum" by downward displacement of the brain stem. (3) To prevent shock and possible death of the patient from too sudden escape of the cerebro-spinal fluid. (4) To provide for free and continuous drainage of the infected cerebro-spinal fluid and thus enable Nature to effect a cure of the disease. (5) To afford inspection of the foramen of Magendie, and if it be closed, its reopening. (6) To forestall possible complications, especially hydrocephalus. (7) To accomplish these desirable ends by an operation of the simplest technic, in the minimum of time, with the least shock.

Among the conclusions were: (1) The only relief is by early, free and continuous removal of the rapidly forming cerebro-spinal fluid, thus preventing cerebral compression, bulbar anæmia and paralysis and death. (2) Anatomy, physiology, pathology and surgery show the cisterna magna the place best suited for such a purpose.

Dr. WENDELL C. PHILLIPS believed that Dr. Kopetzky had proved that cerebro-spinal meningitis can be diagnosed from the chemical examination of the cerebro-spinal fluid, and that the chemical changes precede the clinical manifestations. His conclusions, however, must be subjected to further verification. The speaker had had the opportunity, clinically, of witnessing the effect of relieving meningeal pressure by the early operative interference advocated by Dr. Haynes. In this connection he cited a case which was particularly interesting when compared with two others which had been treated by him at about the same time. Two had labyrinth symptoms of the fulminating type, and had died apparently from intra-cranial pressure. The other was a case of diffuse purulent labyrinthitis, presenting no intra-cranial symptoms at the time. There was post-auricular swelling, and a simple mastoid operation was performed. The cerebro-spinal fluid was examined, chemically, by Dr. Kopetzky, and the usual laboratory examination was made. Infection of the streptococcal variety was reported from each examination. There were no meningeal symptoms. Two days after the mastoid operation, because of finding streptococci in the fluid and because of the chemical findings, he determined to do a labyrinth operation, believing the labyrinth to be the source of the infection. The patient presented the usual symptoms of labyrinthitis. He furthermore decided it was a typical case for the Haynes operation for meningeal drainage, and accordingly he drained the *cisterna magna*. The subsequent history of the case was interesting. The patient was returned to the ward in good condition, made apparently a good recovery from the anæsthetic, was perfectly conscious, and presented no symptoms of paralysis or other untoward results. This condition

continued for several days, when the temperature began to rise. The mental symptoms remained clear and the pulse good. On the third day after the first elevation the temperature rose to 103° F. and the mentality became slightly clouded, but this condition was entirely relieved by loosening the drain and permitting a freer flow of cerebro-spinal fluid. The patient went on for nine days after the operation with absolutely no meningeal symptoms. The temperature then gradually rose, the pulse grew somewhat weaker, and at the close of the ninth day the patient died.

Dr. JOSEPH C. BECK (Chicago) asked if it is possible to keep the fluid in the ice-box. All serological tests could be made if the fluid is kept cold, and he wondered if the same applied to the tests described by Dr. Kopetzky.

Dr. IRVING S. HAYNES said that one of the great advantages of the operation under discussion consisted in its proceeding through practically bloodless structures. A few anastomotic veins might be encountered, but the bleeding in the bone might be disregarded. In the average case no hæmorrhage would be encountered, and for the unusual cases Horsley's wax and other measures would serve to arrest hæmorrhage. Ligation should be resorted to, of course, when necessary. He used rubber or gutta-percha tissue drainage places between the lips of the dural incision. The longest time he had left a drain in place was four days. In all his cases the patients died, because they were not seen early enough. The operation was feeble and rational, and he hoped to have some curable cases in which to employ it.

Brain Abscess of Otitic Origin: A Study of Twenty-one Cases.—Dr. Edward Bradford Dench (New York).—Of the twenty-one cases, seventeen were instances of temporo-sphenoidal abscess, and four were cases of cerebellar abscess. This experience controverts the statement made by certain observers that cerebellar abscess of otitic origin is of more frequent occurrence than temporo-sphenoidal abscess from the same cause. Of the temporo-sphenoidal abscesses, seven were on the right side and ten upon the left side. Of the cerebellar, two were upon the right side and two upon the left side. The avenues of infection are of particular interest to otologists. Of the temporo-sphenoidal abscesses, in nine cases infection occurred through the tympano-mastoid roof. In one case the abscess was found in the Island of Reil, and so must have been of metastatic origin. In another an abscess was found in the temporo-sphenoidal lobe following a decompression operation, at which time the temporo-sphenoidal lobe was explored for a possible abscess. As the purulent discharge from the ear still continued in this case it is possible that the subsequent abscess developed as the result of infection in the brain tissue, which had been broken down at the previous exploratory operation.

Of the cerebellar abscesses, in three cases infection occurred in the lateral sinus. In the fourth case of cerebellar abscess there was a complicating neoplasm of the auditory nerve trunk, the cochlea being completely destroyed by the neoplasm tissue (fibro-sarcomatous in nature). Infection in this case probably occurred through the internal auditory meatus, although the exact avenue of invasion could not be made out.

The relative frequency with which brain abscess followed acute and chronic middle-ear suppuration respectively was as follows: In four of the twenty-one cases the duration of the suppuration was unknown. In seven there was a history of chronic suppuration, while in ten intracranial involvement followed an acute suppuration of the middle ear. In

two of the acute cases there was a period of latency, in one case extending over ten years, and in a second case extending over a period of one month. In four cases following acute otitis media the mastoid antrum was exceedingly small and the middle cranial fossa very low. This anatomical fact may explain the development of a suppurative focus within the temporo-sphenoidal lobe following acute otitis in these particular cases.

The results of operative methods in the different cases were as follows: Of the seventeen temporo-sphenoidal abscesses ten died and seven were cured. Of the cerebellar cases three died and one was cured. The cause of death in the fatal cases was purulent meningitis, excepting in two instances, in one of which death was due to pneumonia, in the other the case was complicated by a neoplasm involving the auditory nerve trunk.

Dr. JAMES F. MCKERNON (New York City) considered abscess in the temporo-sphenoidal region more frequent than in the cerebellar, the ratio being four to one. The most frequent avenue of infection in the temporo-sphenoidal lobe was through the tegmen antri. The symptom upon which he laid greatest stress was localised and continuous pain, which, in his experience, had always been present. The eye symptoms had been found negative in more than 60 per cent. of cases. Many cases had been examined several times, and in only 40 per cent. was there any eye involvement. It was best to operate through the avenue of infection. It was safer to drain through the infected area than to go higher or lower, where the tissue was not infected. The decompression operation was of value for two reasons: First, by exposing the dura, opening it, and allowing it to become seared down, the abscess cavity could be explored later. Should the cavity be in close proximity to the opening in the dura, it usually followed the line of least resistance. Second, it prevents secondary meningitis. After evacuating the abscess cavity there should be as little manipulation of the brain substance as possible. He deprecated introducing the finger, gloved or otherwise, and believed that many cases of renewed infection were due to opening new avenues of infection at the time of operation. Formerly he had used a plain gauze drain; now he employed only the cigarette drain for the first three or four days, after which, provided the abscess cavity collapsed, it was better to discard the cigarette drain and to place in the sinus leading to the cavity a small piece of rubber tissue.

Dr. GEORGE F. COTT (Buffalo), referring to Dr. McKernon's remark concerning the presence or absence of pain, said he had observed several cases, two of which were cerebellar, in which there was no pain at all. One patient, a foreigner, aged thirty-five, walked to the operating table without having complained of pain; the radical operation was performed, the patient became comatose, and in two days died. *Post-mortem* examination showed that one entire hemisphere was bathed in pus, which trickled down upon the *post-mortem* room floor. Another case of a man, aged forty-five, never manifested any pain; had frontal sinus empyema. The patient suddenly lost the power of speech. Upon operating the skull the whole frontal lobes were found bathed in pus, nearly one half the entire brain.

Dr. EWING W. DAY (Pittsburg) called attention to a class of cases simulating abscess, the pathological condition of which he had not seen described. There was a history of acute or chronic purulent otitis media, acute pain and tenderness, blood picture practically normal, no temperature, and more or less definite nervous symptoms, with a diagnosis in each case of abscess. Upon exploration he had found no abscess, but a

thrombus, thoroughly organised, creating no pressure, and giving no evidence as to what initiated the disturbance. Relief resulted from the curetting out of the organised material. In one case he did a jugular and lateral sinus operation for an acute condition. After healing had taken place the patient had aphasia and mental confusion, at which time he noticed a bleb, not larger than a bean, over the old sinus. This was curetted and the man sent away. The mental confusion and aphasia entirely disappeared, together with all the symptoms which had been present before.

Dr. S. MACCUEEN SMITH (Philadelphia) agreed with the previous speakers concerning the relative frequency of abscess in the temporo-sphenoidal region. His experience was not in accord with that of others in the matter of abscess formation more frequently complicating the chronic form of otitis media; in latter years he had found it more frequently in the acute form. It was of the greatest importance, in his opinion, to operate through the avenue of infection whenever this could be found. In all of his cases which recovered he operated through the avenue of infection, it not being necessary to make a counter opening externally.

Dr. DENCH thought too much emphasis was laid upon the presence of pain.

The Eustachian Tube in Chronic Otitis Media.—Dr. Edgar M. Holmes (Boston).—*General pathology.*—The associated inflammation in ear and tube may vary in degree, a severe inflammation of the tube may exist without showing aural signs. Very slight changes in the tube may cause severe aural complications.

Ætiology.—Nasal pathology, marked deformities may exist without apparent trouble in the Eustachian tube or ear, and again the relief from slight nasal disease sometimes results in a cure of severe salpingitis and the resulting middle-ear conditions.

Prognosis.—As yet our knowledge is not sufficient to give a positive prognosis; many severe middle-ear inflammations of long-standing, with marked loss of function, after having failed to respond to long courses of treatment by other methods, may be relieved by restoring the Eustachian tube to its normal function.

Treatment.—General epi-pharyngeal applications; surgical treatment of hypertrophies and growths; dilation with bougies; applications within the tube; and general hygienic and systemic treatment.

Dr. FRANCIS P. EMERSON (Boston) said individual cases have shown improvement, but always in proportion to the extent that the process was confined to the Eustachian tube, and had not seriously involved the middle ear, with its secondary changes. The best results were obtained by carefully cocainising the tube, followed by a cotton-tipped applicator, impregnated with 20 per cent. argyrol. The greater number of patients felt that there was less stuffiness in the ears, less tinnitus and that the fluctuations in hearing were less extreme, even when the disease had extended over many years. In many cases it seemed as though the disease was less progressive. He had not seen cases with extreme deafness recover their hearing except in a few instances, following acute infections, where one could not be positive, it would not have occurred under former methods. In cases that are distinctly chronic in type and that have failed to improve under previous treatment, secondary changes have already occurred in the middle ear in the majority. We must limit ourselves then to these uncured cases that have failed to improve or are becoming

progressively worse under usual methods, and not treat the Eustachian tube in every case if we are to learn its relative value. His conclusions were as follows: First, if there was considerable loss of the high notes, *i. e.* 3:25, as determined by the whispered voice or acoumeter, the hearing was not markedly improved, by additional local treatment of the Eustachian tube. Second, with a positive Rinne, an occasional case will show very marked improvement, which is in direct relation to the length of time elapsing since the acute infection, and the limitation in the main of the pathological process to the tube itself. Third, with a marked negative Rinne, we have failed to note any permanent improvement in hearing. Fourth, most patients admitted that the ears were less stuffy, the fluctuations in hearing less marked, the tinnitus improved and apparently the otitis media was less progressive.

Dr. SIDNEY YANKAUER (New York) thought the dictum that all chronic catarrhal affections of the middle ear are due to an extension of infection through the Eustachian tube had given rise to many errors. So long as the tube was imagined and not seen it was easy enough to believe anything concerning it, but since instruments have been devised for examining it, a different classification of these diseases must be made. A good deal has been said about inflammation of the various parts of the Eustachian tube; this prompted him to study the tube, as actually seen by the various instruments. In order to determine what part of the tube was seen by these different instruments he devised an instrument as follows: A tube, about 1.5 mm. in diameter, was bent at one end to the shape corresponding to the curve of the Salpingian curettes, so that it could be passed through the external auditory canal down to the isthmus; the other end of the tube was provided with a scale. Through this tube a bougie, provided with an indicator, was passed. A few cases of middle-ear suppuration with large perforations were selected for study. The tube was inserted through the perforation, and the bougie was advanced through the tube until it came into the naso-pharynx. By withdrawing the bougie it could be accurately determined how far into the Eustachian tube it was possible to see. With the post-nasal mirror he was able to follow the end of the bougie outward just as far as he could with the naso-pharyngoscope. With the direct naso-pharyngeal speculum he could follow it 3 mm. further out. By introducing a tubular speculum into the tube through the direct naso-pharyngeal speculum he could see 12 mm. further, so that he could get within 1 cm. of the isthmus. From these experiments he concluded that everything that can be seen with the naso-pharyngoscope or post-nasal mirror is within the naso-pharynx, and that what is within the tube cannot be seen by any of the instruments named. To see the interior of the Eustachian tube one must open it and insert a speculum. Of the many cases examined with the various instruments he had found many in which there was disease in the nose, in the fossa of Rosenmüller, and some on the crest of the Eustachian eminence; only a few in which there was disease in the Eustachian orifice, but in the interior of the tube he had never found a pathological lesion. While, therefore, disease about the orifice and in the nose was of frequent occurrence, the interior of the tube itself seemed to be without disease. He had failed to find direct extension from the nose into the middle ear through the Eustachian tube.

Dr. HOLMES agreed that in many cases disease in the Eustachian tube cannot be seen. It did not signify, however, that because no swelling nor marked hypertrophy could be seen in a given case, the tube was not interfering with the middle ear. If the tube did not ventilate the middle

why should there be retraction of the drum membrane? In many cases, after applying cocaine or adrenalin, or passing a bougie, a marked secretion could be found, and yet no disease be present around the orifice of the tube.

Abstracts.

LARYNX AND TRACHEA.

Andrew, James.—Note on a Case of Fracture of the Larynx. "Lancet," March 9, 1912, p. 648.

Engine driver, aged forty-three. Fracture of thyroid and cricoid cartilages during a violent attack of sneezing when he turned his head sharply away bringing the larynx into sudden contact with the sharp edge of his collar. The voice was husky, the throat swollen and painful, there was dysphagia and profuse salivation. A poroplastic splint was worn for twenty-one days and the patient gradually recovered.

Macleod Yearsley.

Blumenfeld, Prof. (Wiesbaden).—Hæmostasis in the Larynx by means of Metal Clips. "Zeitschr. f. Laryngol.," Bd. iv, Heft 3.

Professor Blumenfeld records a case in which he got into a rather tight corner. The patient was a man, aged fifty-one, who suffered from tuberculosis of the upper aperture of the larynx; examination of the lungs revealed a healed tubercular process. Blumenfeld first attempted to remove the stump of the epiglottis with the snare, but failed; the double curette of Alexander proved more satisfactory and, with it, he not only removed the epiglottis but the diseased part of the ary-epiglottic folds. There was free bleeding from the left fold which an adrenalin mop failed to stop. A coating of gelatin (Goldschmidt) was also tried; the patient was given ice to suck and also an enema of chloride of calcium. The patient became very pale (pulse feeble and irregular), and as the hæmorrhage still continued the question of tracheotomy and pharyngotomy was considered. Before resorting to this measure, however, Blumenfeld tried the instrument designed by Avellis for clipping together the faucial pillars after enucleation of the tonsil. After several unsuccessful attempts Blumenfeld at last succeeded in getting a clip on to the bleeding spot and the hæmorrhage at once ceased; thereafter the patient almost immediately collapsed. The clip remained *in situ* seven days and caused little pain, but there was again difficulty when the clip had to be removed, and a special instrument had to be made. The patient progressed favourably and the larynx appeared to be healed four months later.

Blumenfeld admits that, even after the application of a clip, hæmorrhage may go on into the submucous tissues. He notes that the clips must be secured by means of a thread to the patient's cheek. Suitable instruments have now been devised by the writer for inserting and removing the clips in the larynx; they can be fitted to the ordinary Krause handle.

J. S. Fraser.

Carroll, J. J.—Cartilaginous Tumours of the Larynx. "Annals of Otol., Rhinol., and Laryngol.," vol. xx, p. 807.

Contains a good bibliography and tabulates ten cases from various sources, including one by the author, occurring in a man, aged thirty-four. Carroll pleads for uniformity of nomenclature, and suggests that enchondroses of the larynx are not real tumours, are benign in character, and doubtful in ætiology. *Macleod Yearsley.*

Wallece, W. T. (Berlin, Ontario).—A Case of Epithelioma of the Larynx. "The Canadian Practitioner," May, 1911.

The patient, male, aged forty-six, stout, heavily built, neck short and thick, was examined on July 20, 1906. He complained of hoarseness, pain, cough, dyspnoea and dysphagia.

Father died at the age of eighty, mother at the age of fifty. Causes of death indefinite. An elder brother died of malignant disease of larynx, which had its origin in one of the vocal cords.

Patient was a heavy smoker. No history of any previous trouble. Hoarseness of one month's duration, gradually increasing. On examination, a fusiform thickening of anterior part of left vocal cord presented itself, shading off gradually into normal cord substance. A few blood-vessels could be seen coursing over the tumour. Cord movements sluggish, but approximating as closely as the tumour would allow. Larynx otherwise normal.

Diagnosis of epithelioma was made by elimination, tuberculosis and syphilis being negatived. Section of growth was removed by endolaryngeal route and microscopical examination confirmed the diagnosis.

The patient consenting to thyrotomy, a long incision was made through the thick subcutaneous fat. And the thyroid split open with stout turbinate scissors, hæmorrhage being controlled by holding open the sides of the thyroid with retractors. Local application of cocaine and adrenalin were then substituted for the chloroform. The cord affected, together with one quarter of an inch above and below it, and a piece of the adjacent cartilage were next excised, and the wound sutured through the severed sections of the perichondrium of the thyroid, a small gauze drain being inserted.

Tracheotomy was not considered necessary.

Subsequent to operation there was little difficulty on swallowing. Liquid nourishment was given. The wound healed promptly and a fibrous band formed in place of the excised cord. The patient made a good recovery and has a strong guttural voice. *Price-Brown.*

NOSE AND NASO-PHARYNX.

Yearsley, Macleod.—A Case of Median Dermoid Cyst of the Nose. "Brit. Journ. Child. Dis.," vol. ix, p. 160.

A child, aged five. Swelling in median line of nose, noticed two years and increasing in size. Soft and elastic and measuring 1 in. by $\frac{3}{4}$ in. Dissected out and found to be attached to nasal bones at junction with lateral cartilages. Contained a greyish, putty-like material and was lined with fine white hairs. *Author's Summary.*

Freer, Otto T.—The Inferior Turbinate: Its Longitudinal Resection for Chronic Intumescence. "Laryngoscope," December, 1911.

The so-called hypertrophy of the inferior turbinate is in reality a condition of vascular distension due to a vaso-motor relaxation of the muscular coats of the cavernous venous spaces, as is shown by the retraction on the application of adrenalin. True hypertrophy is a much less common condition, and is recognised by the firm nodular condition of the mucous membrane with the absence of retraction with adrenalin.

This persistent venous engorgement is due to either—

- (a) A general sluggishness of the circulation;
- (b) Some local vaso-motor condition, such as hay-fever or vaso-motor rhinitis, or most frequently to
- (c) The presence of some fundamental nasal obstruction, so that during inspiration a suction action is exerted on the mucosa.

Where possible the causative obstruction should be removed, but if due to a general insufficiency of the nasal passages the turbinates must be reduced in size. This can be accomplished by the partial turbinectomy usually employed, but the author has for years used the following method, which has the advantage of not leaving a ragged stump to cause crusting and epistaxis.

A vertical incision is made over the fore-end of the turbinal with a myringotome and the muco-periosteum elevated with the same instrument from the greater part of the convex turbinal surface. This elevation is completed to the posterior end with a sharp elevator, and the muco-periosteum is then incised along the whole of the lower margin down to the bone, thus making a flap. This flap is turned up, the turbinate bone removed close to its attached margin with a chisel, and the flap replaced and kept in position with tampons for two days. Healing is by first intention, and the final result a free nasal passage from end to end with the stump forming a miniature turbinal.

A. J. Wright.

Friedrich, Prof. (Kiel).—Post-operative Rhinitis Sicca. "Zeits. f. Laryngol.," Bd. iv, Heft 3.

There are three causes of post-operative rhinitis sicca: (1) The galvano-cautery; (2) removal of the inferior turbinal; (3) resection of the middle turbinal and lateral mass of the ethmoid.

(1) The electric cautery should only be used in cases of intermittent engorgement of the turbinal, and should never be employed to destroy new-formed pathological tissue. Cauterisation, further, should be linear and not widespread; even linear cauterisation should not go too deep. If the nasal mucous membrane be too dry air-hunger may be present although there is plenty of room in the nose.

(2) In cases of marked hyperplasia Friedrich is in favour of the removal of the free border of the turbinal with scissors and snare; the bone, however, should be left untouched. Friedrich calls attention to a paper in which one surgeon states that 627 turbinal resections have been performed within four years in his private ambulatorium! Friedrich believes that the ease and quickness with which the operation can be performed are accountable for its popularity, and reminds us of the strong opinions expressed at the London Congress in 1897 by Sir Felix Semon and others.

(3) The author is also against removal of the middle turbinal along with the lateral mass of the ethmoid. He holds that such an operation alters the formation of the nose and the character of the nasal secretion.

In one case in which too much tissue had been removed by another surgeon, Friedrich injected paraffin into the septum and turbinals with great benefit to the patient. He agrees with Alexander that the secretion present in cases of rhinitis sicca is, in some way, due to bone disease. [Although one cannot help agreeing with the author that much harm is done by "turbinal snatching" owing to the air reaching the pharynx and larynx in an unwarmed, unmoistened, and unfiltered condition, he appears to go too far when he altogether objects to the removal of the lateral mass of the ethmoid; it would be interesting to know what treatment he suggests in cases of marked ethmoidal suppuration.—REF.]

J. S. Fraser.

EAR.

Hyslop, Theo. B.—Intra-cranial Murmurs in their Relationship to Tinnitus Aurium. "Lancet," October 14, 1911, p. 1062.

This paper deals with the possible intra-cranial origin of tinnitus capitis. He asks—"What is the nature of the protective mechanism which prevents our subjective perception of actual intra-cranial movements?" He has long sought explanations of some of the auditory phenomena in the insane, an investigation necessarily requiring many years of patient labour and observation. He believes that direct stimulation of the auditory nerve is rare except in cases where degeneration of that nerve is taking place. There are various sources of error in the subjective localisation of sounds, and a full account of the phenomena of intra-cranial murmurs requires full consideration of factors which are either exoneural, entotical, esoneural, or psychical. Briefly describing the comparative anatomy of the cerebral lymphatic system, he deals with the physiology of the intra-cranial circulation. In the brain, the venous outflow is regulated so as to prevent its becoming unduly slow or rapid. The absence of valves in the intra-cranial veins would tend to prevent the occurrence of venous murmurs, and possibly the trabeculae not only regulate the flow of venous blood but also prevent the conduction of sound vibrations. It is assumed that the flow of blood in the venous sinuses is continuous, but, with dilated capillaries and high blood-pressure, pulse-waves may be propagated into the beginnings of the veins. Extra-vascular pressure thus causes extra-venous pressure, and a venous sound so generated may not improbably be propagated in the direction of the venous flow. "Cerebral pressure" really means either undue preponderance of one or other of the cranial contents, partial displacement of one or other constituent, acceleration of the arterial or retardation of the venous circulation, or alteration in the compensatory movements of the cerebro-spinal fluid. Perfect balance of the relative quantities of the cranial contents presupposes certain activities or movements, which are also essential to proper metabolism. The fluid contents of the lymph cisterns may serve to prevent the conduction of intra-cranial sounds to the internal table of the skull; this may fail under abnormal conditions. A point to recognise is that fluid from the subarachnoid lymph-spaces, when forced from the brain by increased intra-cranial blood-pressure, not only passes into the perilymphatic space of the labyrinth and thereby tends to modify the pressure of the endolymph, but it also serves as a more direct conducting medium for sound vibrations arising in connection with the pulsatile or other movements of the brain. These brain

movements are (1) pulsatile from the large basal cerebral vessels; (2) respiratory; (3) vascular elevations and depressions, which alternate and are due to periodic dilatation and contraction of the blood-vessels, regulated by the vaso-motor centre. The exceedingly interesting pulsatory brain movements undoubtedly give rise to intra-cranial murmurs, and during the former the cerebro-spinal fluid is subjected to doubly compensatory movement. Any excess of cerebro spinal fluid is always compensatory, and it is to be noted that excess of this fluid within the cranium is not, as a rule, attended by tinnitus. In one case of dementia under Hyslop's notice, an intra-cranial murmur described by the patient as "deep down" in his brain, the tinnitus was probably due to the to-and-fro movement of the fluid over the roughened middle cerebral fossa, and was of respiratory rhythm. In great expansion of cerebral volume, owing to arterial pressure, brain may come in contact with the rigid bone, giving rise to a pulsatile murmur. Anæmia and hyperæmia are powerful agents in modifying pressure equilibrium. Undue pressure on peri- and endo-lymph attends the high arterial pressure of Bright's disease, giving rise to tinnitus. In plethora culminating in apoplexy, in which tinnitus is an early symptom, the brain may be forced against the inner table of the skull, thereby rendering it possibly for the pulsatile waves to come into almost direct contact with it. In anæmia and chlorosis, where tinnitus is often a prominent symptom, the murmurs originate possibly from the jugular bulb. Venous murmurs may be pulsatile or respiratory in rhythm, and the blood in the brain sinuses may undergo a pulsatile movement owing to the fact that during cardiac diastole much blood flows into the veins, and this movement may be propagated into the veins of the retina and auditory organs. Hyslop finally discusses crackling noises in the region of the longitudinal and lateral sinuses and the torcular. They are of uncertain origin.

Tinnitus due to cerebral aneurysm is only referred to, the paper being designed rather to open up a distinct line of investigation.

Macleod Yearsley.

PHARYNX.

Hays, Harold.—*Pneumococcus Infections of the Throat.*—"Annals of Otol., Rhinol., and Laryngol.," vol. xx, p. 835.

The author describes three cases and refers to the literature. The condition usually comes on suddenly with moderate temperature, intense congestion and œdema of the throat and inflammation of the anterior cervical glands. Prostration is considerable, swallowing painful, with thick tenacious mucus. Superficial circumscribed ulceration may occur. The course is short, terminating by lysis. Diagnosis must be made from diphtheria, Vincent's angina, tuberculosis, influenza and rheumatism.

Macleod Yearsley.

Spencer, W. G., M.S.—*Congenital Specific Stenosis of the Fauces and Pharynx.*—"Proc. Roy. Soc." (Clinical Section), January, 1912.

Female, aged nineteen, shows persistent nodes and gummatous scar on scalp. In June severe ulceration of fauces and pharynx; tracheotomy was performed. *Salvarsan injected and ulceration rapidly healed, but stenosis resulted.* Mr. Evans performed plastic operation in August, but in October patient re-admitted with dysphœa and dysphagia; second tracheotomy, naso-pharynx only admitted small catheter and oro-pharynx

only number 10. Strictures dilated gradually, and patient taught to pass œsophageal tube herself; the tracheotomy tube will be required permanently.

J. S. Fraser.

Berry, Gordon.—**Sarcoma of the Tonsil.** "Boston Med. and Surg. Journ.," vol. clxvi, p. 276.

The patient was a woman, aged eighty-five years and eleven months, with a lympho-sarcoma of the right tonsil and a nodular mass under the sterno-mastoid. The latter was dissected away and the external carotid ligatured. The tonsil tumour was removed through the mouth by dissection and a cold wire snare. Recovery was rapid and uneventful and no recurrence had taken place two months later. The neck began to be brawny three weeks later. A discussion of the literature is given.

Macleod Yearsley.

ŒSOPHAGUS.

Myers, H. L.—**Report on Three Cases of Removal of Coins from the Œsophagus of Infants by a Simple Procedure.** "Annals of Otol., Rhinol., and Laryngol.," vol. xx, p. 460.

The simple procedure was the passage of an olive-pointed, flexible bougie beyond the coin, followed by traction when the olive end engaged the lower edge of the coin.

Macleod Yearsley.

Yankauer, Sidney.—**Four Cases of Foreign Body in the Œsophagus removed with the aid of the Œsophagoscope.** "Annals of Otolaryngology and Laryngology," vol. xx, p. 414.

Case 1, child, aged three; penny just above sternal notch, removed with ease. *Case 2*, child, aged fourteen months; small, irregular leaden toy at level of sternal notch, easily removed. *Case 3*, boy, aged two and a half; penny just below cricoid, easily removed. Previous attempts, by forceps introduced blindly, failed owing to seizure of the mucous membrane instead of the penny. *Case 4*, boy, aged four; piece of brass just above sternal notch. Truncated cone, smaller end very sharp. Extensive wound of posterior œsophageal wall at level of cricoid leading into fistulous track behind œsophagus. Foreign body removed with difficulty owing to torn œsophagus. Patient died next day.

Macleod Yearsley.

MISCELLANEOUS.

Caldera, C. (Turin).—**Researches on Bacteræmia in Oto-rhino-laryngoiatry.** "Archiv. Ital. distologia," January, 1912, p. 1.

The author, considering the demonstrated presence of bacteria in the blood in many diseases without the occurrence of grave septicæmia, has endeavoured to ascertain in what diseases of the throat and ear bacteræmia may take place.

It is well known that the tonsil is the gate of entrance for many grave blood diseases resulting, for instance, in endocarditis of which fatal cases have followed various forms of angina. Recent cases of Prof. C. Fedeli¹ and of Prof. Eggerli² are quoted. In three of these a fatal termination

¹ "Bollettino mal. Orrecchio," February, 1911.

² *Ibid.*, October, 1910.

took place from septicæmia following tonsillitis. Also three fatal cases reported by Dr. Sbrozzi¹ with a similar history.

The author has studied the blood conditions in eighteen cases of phlegmonous tonsillitis in patients of various ages and conditions. The pus from the abscess gave pure cultures in sixteen cases, in the other two one showed staphylococcus and streptococcus and the other streptococcus with large diphtheroid bacilli and spiral forms. Brief particulars of nine of these cases are given. In only three of these was the co-existence of germs in the blood demonstrated. The results of these investigations appear to confirm the general experience that the entrance of micro-organisms into the circulation in peri- and lacunar-tonsillitis is fortunately a very rare and difficult process.

In otic disease, on the other hand, infection of the blood-stream takes place more easily. The author endeavours to explain this on the hypotheses that here the exudate is compressed within bony cavities and is in part absorbed, so to speak, *in situ*, and that this accounts for the hyperleucocytosis ascertained to take place in otic cases. It may happen that amongst the leucocytes returning there may be some laden with germs attenuated but not destroyed, and that these are again set free in the circulation.

James Donelan.

REVIEW.

Traitement de la Surdit   par la R   ducation de l'Ou   (The Treatment of Deafness by Re-education of the Hearing). Par Dr. A. MAURICE. Chez l'Auteur, 256, Boulevard St. Germain, Paris, N.D.

The re-education of the deaf by means of sounds regulated so as to stimulate and awaken from physiological apathy the dormant sense of hearing, as Dr. Maurice reminds us in the book now before us, is no new thing. The Abb   Rousselot, Marcel Natier and Victor Urbantschitsch might be mentioned among the pioneers of the method, and, in quite recent times, Z  nd-Burguet² and others have been advocating the system as worthy of trial.

To satisfy the ordinary workaday otologist, who has seen many cures for deafness come and go, this method, on the face of it, is one which should be backed by unimpeachable evidence. It is true, no doubt, that in many deaf people the absence of hearing may be largely due to want of use. It is probable, also, that this slumbering element in the auditory sense can be roused into activity by suitably contrived stimuli and exercises. In other words, the treatment is not without a certain rational basis. But, in spite of all that, while it would be unscientific to dismiss the claims of Dr. Maurice and his fellow-workers with a shrug, still, before his method can be generally adopted, clear and unmistakable evidence must be laid before us both as to its usefulness and as to its limitations.

Dr. Maurice uses an apparatus he calls a "Kinesiphone." This is an electrical contrivance by which sonorous vibrations from 80 to 3500 v.d. are produced. The patient holds to his ears the vibrating membranes, which are mounted on handles resembling the ear-piece of the telephone. The effects produced are due to "a combination of vibratory massage and sonorous re-education."

¹ "La Revista Ospedaliera," Rome, July, 1911.

² JOURN. OF LARYNGOL., RHINOL., AND OTOL., February, 1912, p. 117; and July, 1912, p. 404.

As to what these effects amount to, the cases as they are recorded in Dr. Maurice's pamphlet are eloquent, and were it not for our ingrained caution we might confess ourselves converts to his teaching. But when the critical eye is turned on the case-records it notices the absence of several criteria which we hope Dr. Maurice will furnish in subsequent publications. Tuning-fork tests are entirely wanting; the watch is only mentioned to be condemned (perhaps quite justly); the tests adopted (speech and whisper) do not seem to have been made by a second, presumably indifferent observer, and the detailed results of the examination of the membrane and of politzerisation and of the use of the catheter are omitted.

Taking Dr. Maurice's treatment at his own valuation, however, for the time being, there can be no doubt that his work arouses our interest, so that even although we may not just yet purchase the kinesiphone—the price of which is not stated—still we shall await further news of his experiments with some degree of hopefulness.

Dan McKenzie.

NEW INSTRUMENTS.

DR. W. H. KELSON'S SPHENOIDAL SINUS CANNULA AND STYLET.

THE proper making of applications to the sphenoidal sinus is, owing to its situation, often a matter of some difficulty, and the stylet and cannula shown in the diagram have been devised principally with a view to ensuring two points:

(1) The non-contamination of the point of the stylet in its passage through the nose.



(2) The application on the end of the stylet (which is generally sheathed in a small piece of cotton-wool) being prevented from coming into contact with other parts of the nose.

The instruments have been made in two sizes, the longer ones I have found useful also in making applications to the post-nasal space in certain cases in which the usual route *via* the mouth is contra-indicated.

NEW REMEDIES.

"TABLOID" "EPININE" COMPOUND.

"Tabloid" "Epinine" Compound, recently put on the market by Messrs. Burroughs Wellcome & Co., contains gr. $\frac{1}{1000}$ of "Epinine" (a synthetic substance with adrenine-like action) in combination with suitable small doses of heroin hydrochloride, ipecacuanha, benzoic acid and oil of gaultheria. It is intended to be sucked so as to secure the local application of these drugs to the mucous membranes of the throat. The product is made with a demulcent base and dissolves slowly in the mouth, thus ensuring prolonged contact of the medicaments with the affected parts.

THE
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**THE EDUCATION OF THE SPECIALIST IN THROAT, NOSE,
AND EAR DISEASES.**

OUR recent series of articles on the teaching of otology and laryngology in several countries, viz. in Denmark (Tetens Hald), Germany (von Eicken), Italy (Massei), Austro-Hungary (Frey), and France (Gellé, jun.), cannot fail to serve a useful purpose, since in our newly developed speciality it is difficult to arrive at the organisation of the clinics and the teaching that the more beaten paths of general medicine and surgery have attained, and a comparison of the methods pursued in these countries will help us to realise the weak points in our own. We are correspondingly indebted to our *confrères* abroad, who have taken so much trouble to compile authoritative contributions for the instruction of our readers.

To our own country belongs the credit of initiating the earlier developments of modern otology in the pioneer work of Toynbee, and though Ferguson first described the use of a mirror for obtaining a laryngoscopic image for observing disease in the larynx, it was left to a Spaniard, Manuel Garcia, working in Paris, to reinvent and render practicable the systematic use of a laryngoscopic mirror, and to Vienna, in the persons of Türck and Czermak, to initiate modern laryngology. And if we have been slow to appre-

ciate the far-reaching possibilities of a practical knowledge of diseases of the ear, nose and throat, allowing Vienna to become the chief educational clinic for these specialities during the latter half of the nineteenth century, we may find some consolation in one fact brought out by our series of articles, viz. that our colleagues abroad have also suffered from the innate conservatism that has ever been characteristic of our profession. More recently the discussion at the annual meeting of the British Medical Association "On the Education of the Specialist," introduced by Prof. Holger Mygind, of Copenhagen, Dr. Watson-Williams, of Bristol, and Prof. Birkett, of Montreal, has shown that both in Holland and in Canada and the United States of America the education of the student, as well as of the specialist, needs systematising and developing on the sound lines that obtain in the foundations and clinical sides of general medicine and surgery. Thus while recognising that in this country there is an urgent call for more systematic training of the medical student in the elements of otolaryngology and of the graduate who desires to enter the ranks of specialists, we are sharing with nearly every other country the difficulties that beset those who break new ground; we should cover the virgin soil with richer harvest if the husbandry were more scientific. In Great Britain and Ireland there are fewer professors at the head of well-organised clinics than in Germany or Austria-Hungary, but on the other hand, as in the United States, we have a larger number of hospital clinics under the direction of very competent specialists. With us the work is less concentrated and the individual clinics and their equipment are often small compared with some of the best European clinics, yet similar differences are just as obvious in regard to general medical, surgical and obstetrical clinics. This fault, if it be a fault, is an essential part of the English method, and while there are disadvantages, there are also advantages in our English system. There is no doubt that the disadvantages for teaching purposes become more obvious in connection with a newly developing speciality, but the fields of otolaryngology are so extensive that every year the defect becomes less obvious with the increasing growth of the special clinics. Meanwhile the value of special hospitals with which a considerable number of specialists are associated lies not only in their wealth of material, but in their organisation of daily clinics for teaching purposes. The list of clinics associated with British universities will serve to indicate the number of beds devoted to our special branches, in extra-metropolitan university clinics, but it should be

mentioned that there are many other special clinics and special hospitals in the provinces which are in charge of specialists and are doing excellent work. There are at least 800 hospital beds devoted to ear, nose and throat cases in the United Kingdom, and although this is obviously no criterion of the completeness and value of the work done in ear, nose and throat clinics, it convinces us that our special branches are provided with opportunities for scientific research and clinical investigations.

TABLE SHOWING THE NUMBER OF BEDS DEVOTED TO EAR, NOSE AND THROAT CASES IN BRITISH UNIVERSITY OTO-LARYNGOLOGICAL CLINICS.

	Beds.	Staff.
London :		
General hospitals—		
Affiliated	105	17 surgeons . 11 hospitals. 4 assistant surgeons . 16 clinics.
Non-affiliated	18	3 surgeons . 4 hospitals.
Special hospitals—		
Golden Square	64	{ 6 surgeons 3 assistants
Central	30	{ 8 surgeons 1 assistant
Royal Ear	20	
Two each with less than 20 beds	26	
	263	
Edinburgh :		
Royal Infirmary	22	2 surgeons
Manchester :		
Royal Infirmary	16	{ 1 surgeon 1 assistant surgeon
Ear Hospital	24	
St. John's Hospital	12	
Leeds :		
Infirmary	26	
Sheffield :		
Royal Infirmary	15	
Newcastle :		
Royal Infirmary	14	
Throat and Ear Hospital	12	
Liverpool :		
Royal Infirmary	2	
Eye and Ear Hospital	34	for ear cases
Birmingham :		
Royal Infirmary		
Throat and Ear Hospital	48	

	Beds.	Staff.
Bristol :		
Royal Infirmary ¹	8 .	
Cardiff :		
Royal Infirmary	10 .	
Glasgow :		
Western Infirmary	12 .	
Ear and Throat Hospital	12 .	
Royal Infirmary	20 .	
Dundee :		
Royal Infirmary	10 .	
Aberdeen :		
Royal Infirmary	8 .	

In addition to the above there are a large number of special clinics at general hospitals and several special hospitals in various cities and towns which are not associated with universities.

P. H. H.

THE INTERNATIONAL COLLECTIVE INVESTIGATION OF OZÆNA (SECOND NOTICE).

By A. BROWN KELLY, M.D., D.Sc.,
Glasgow.

IN the April number of the JOURNAL OF LARYNGOLOGY, RHINOLOGY, AND OTOTOLOGY, it was shown that certain fundamental questions regarding ozaena were still unsolved, and likely to remain so unless studied by means of an international collective investigation. The proposed method of organizing such an investigation and the initial steps that had been taken to secure workers throughout the world were briefly outlined. We now desire to report regarding the progress made during the past six months, and more particularly to indicate the scope of the examinations about to be instituted of subjects of ozaena.

In Germany the investigation has been very thoroughly organized, a host of rhinologists have expressed their willingness to assist, and permission has been obtained to carry out examinations in a large number of institutions. We have to record with deep regret the sudden death in July of Professor Albert Rosenberg, whereby the Central Committee in Berlin has lost a valued colleague, and not a few of us an old teacher and good friend.

In the United States an Executive Committee has been

¹ At the General Hospital and Royal Children's the departments are in charge of general surgeons.

appointed, consisting of the national organizer and representatives from the three principal laryngological societies, organizers have been chosen for the different States, and the co-operation of the Government Department of Public Health and Marine Hospital Service has been requested.

In all the countries of Europe, in Algeria, Asia Minor, Chili and Japan, notable progress has been made with the necessary preparations.

The appeal for co-operation has met with a gratifying response in the British Empire, as is evident from the large and representative body of organizers; those in London were appointed by the Laryngological Section of the Royal Society of Medicine. Additional assistance abroad is needed in order that the disease may be studied in native races in different parts of the world. The writer, therefore, will be pleased to receive the names of medical men resident in the Colonies, and especially in India, who are qualified to engage in this research, in order that their services may, if possible, be secured.

The expenses of the investigation in this country will be considerable; towards defraying certain of these the Carnegie Trust has kindly promised a grant. We are thus enabled to supply gratis the schedules and other printed matter; for the former a charge is made in Germany. The sum at our disposal is insufficient, however, to pay for postages or for special examinations (Wassermann, bacteriological, etc.). Those desirous of being reimbursed for extra outlays are recommended to apply to corporations, authorities or others having funds available for scientific research.

A small guide has been prepared for those taking part in the collective investigation in the British Empire. It contains information and instructions as to the appointment of organizers and committees, the arrangements to be made for the examination of school-children and other classes of persons, the drawing-up of family tables, the investigation of the early stages of ozæna, the questions to be determined in cases of ozæna, and at the *post-mortem* examination of ozænatous subjects; a specimen letter to a school board requesting permission to examine the scholars and the outline of a newspaper article on the investigation are also included.

The scope of the report sheet and of the scheme for the necropsies were decided upon by the Central Committee after careful deliberation. These, with some excerpts from the pamphlet, should prove of interest to rhinologists, and are therefore subjoined.

CHIEF AIMS OF INVESTIGATION.

(1) To determine the frequency and distribution of ozaena, for which purpose school-children and inmates of various institutions will be examined, and the results recorded in enumeration and report sheets. (2) To study the part played ætiologically by heredity and infection respectively, as revealed by the report sheets and family tables. (3) To trace the disease to its onset and gain a knowledge of its early stages by the examination of infants. (4) To study the pathology of the affection by arranging for the systematic examination during life and after death of subjects of ozaena suffering from a fatal malady, and to report the results in accordance with special instructions supplied. In the course of the investigation the desirability of clearing up other points will doubtless arise. It should be understood, however, that the collective investigation will deal solely with questions which cannot be settled by the limited material at the disposal of single individuals.

EXAMINATION OF SCHOOL-CHILDREN.

School-children will form a large part of the material utilised in this investigation. The enumeration sheets have spaces for sixty scholars. On them are noted—the school, class, and teacher; the scholar's name, address, place of birth, and date of birth; and the presence of ozaena or doubtful ozaena. The non-ozaenatous children are dismissed immediately after the examination, while those with ozaena or doubtful ozaena are examined fully in accordance with the report sheet, and a table of their family constructed.

FAMILY TABLES.

The ozaena material furnished by the schools will not be conclusive as to the disease in an advanced form, for the children of the poorer classes leave school as a rule about the time of puberty. It will be of value, however, if a family table is drawn up and the individual members examined. We thus come to know of the presence of ozaena in the parents, and in the brothers and sisters who have left school. In these family examinations we shall frequently meet with cases of latent ozaena, in which atrophy, crusting, and fœtor are very slightly marked, and the true significance of which is recognised only because they are found in a family having one or more members with undoubted ozaena.

On the other hand, in the examination of scholars, etc., the cases suspected of having ozæna are to be tested as to their true character by the examination of other members of the family. The family table thus becomes the central point of the inquiry.

From the family table of patients with pulmonary tuberculosis we shall learn how many members of the same family have phthisis, how many ozæna, and how many of those with ozæna have also phthisis. The information so obtained should throw light on the relations of ozæna to pulmonary tuberculosis.

THE INMATES OF ORPHANAGES, INSTITUTIONS FOR BLIND, DEAF-MUTES, AND THOSE WITH PULMONARY AFFECTIONS, HOSPITALS, ASYLUMS, HOMES FOR INCURABLES, WORKERS IN FACTORIES, SOLDIERS, TRADESMEN, ETC.

The same method, by means of enumeration and report sheets, is to be adopted in the examination of these as for school-children.

INVESTIGATION OF EARLY STAGES OF OZÆNA.

In order to become acquainted with the symptoms that ozæna causes at its onset, all children having a nasal discharge from birth or from the period of suckling are to be examined. The material for this part of the investigation will be found in the children's wards of hospitals, homes for infants, crèches, foundling homes, asylums for children, dispensaries for the diseases of children, lying-in and maternity hospitals, etc. The examinations are to be conducted uniformly, so that the children indicated (1) undergo the Wassermann test, (2) have the nasal secretion examined for gonococci, and (3) in cases of chronic nasal discharge falling under neither of these groups, *i.e.* those in which nasal syphilis and nasal gonorrhœa have been excluded, be submitted to a careful clinical and bacteriological examination. The bacteriological investigations are to be carried out by specially trained workers, employing recognised methods. Some authorities maintain that at present it is impossible to identify with certainty a diplococcus found in the nasal secretion as the gonococcus; all that bacteriology can show is that it is a diplococcus belonging to the same group as the gonococcus. In these cases we must endeavour to arrive at a positive diagnosis by examination of the vaginal secretion of the mother.

We are still ignorant as to whether ozæna at its onset is accompanied by a nasal discharge. We must therefore make a rhinoscopic examination of all the newly born children—whether they

have a nasal discharge or not—in the families that the collective investigation shows to be ozaenatous; if nasal discharge is present it must also be examined bacteriologically.

Further, we do not know if ozaena occurs congenitally, or, as seems probable, develops only in later years. In the latter case the family table again comes to our assistance if we make it a rule to record the nasal conditions in all the young members of a family in which ozaena exists, whether or not we are suspicious of their having ozaena. The school doctors should be able to arrange for the periodical examination of such children.

Syphilitic children with nasal discharge are to be kept under observation, suitable specific treatment being of course adopted, so that the ultimate effect on the nose may be determined.

REPORT SHEET.

I.—*General.*

*Country	
*Town	*Name in full
*School	*Sex *Religion *Nationality
*Class	*Age years; born on
*Birthplace of parents	*Address
*(a) Father	*Birthplace
*(b) Mother	*Later place of residence
*Occupation of parents	

II.—*Clinical History.*

- * (1) When did the nasal affection begin?
- * (2) What symptoms appeared immediately after birth?
- * (3) Which children's diseases, especially infectious diseases, has the patient had?
- (4) Did the child suffer from conjunctivitis? When?
- (5) Natural or artificial rearing.
- (6) Condition, size and cleanliness of dwelling.
- (7) Food supply of family and child.
- (8) Clothing, care of body and teeth.

III.—*General Bodily Condition.*

- (1) General appearance of child (size, development, state of nutrition, etc.).
- (2) Carriage (shape of thorax).

These questions are obligatory; the others are optional.

- (3) Circulatory system—(a) Symptoms (hæmorrhages, palpitation, etc.).
 (b) Examination of heart and vessels.
- *(4) Respiratory system—(a) Symptoms (frequent catarrh, etc.).
 *(b) Examination (especially as to presence of tuberculosis).
- (5) Nervous system—(a) Symptoms.
 (b) Examination (chorea, tetanus, convulsive tic).
- *(6) Bony system (rickets, tubercular disease of the bones, etc.).
- (7) Cutaneous system (lupus, eczema, etc.).
- *(8) Constitutional diseases—(a) Syphilis: Wassermann's reaction.
- Repeated miscarriage of the mother.
 Infantile mortality in the family.
 Bodily condition of brothers and sisters alive.
 Constitution and aspect of the patient.
 Infantilism.
 Scars on skin and mucous membranes.
 Malformations of the skeleton.
 Thickenings of the tibia.
 Repeated swellings of the knee-joints.
 Interstitial keratitis or other ocular affections.
 Ear disease.
 Malformation of the teeth.
- (b) Exudative diatheses (glandular swellings, inflammation of eye, discharge from ear).
- (c) Organs with internal secretion (thyroid gland, pancreas).
- (9) Examination of the urine.
- (10) Conduction of the blood.
- (11) Examination of nasal secretion (microscopic, chemical, bacteriological).

IV.—*Conditions Found in the Upper Air-passages.*

- *(1) Patency of the nose (degree)—note Right. Left.
 presence of crests and deviations.
- *(2) Condition of the inferior turbinates.
- *(3) Condition of the middle turbinates.
- (4) Thickness of the mucous membrane including that of septum.
- *(5) Crusts or secretion (site, appearance).
- *(6) Intensity of fætor (before and after removal of crusts).

- (7) Sensitiveness of nasal mucous membrane.
- (8) Sense of smell.
- * (9) External nose (if possible photograph of full face and profile).
 - (a) Shape.
 - (b) Condition of skin.
- (10) Upper jaw (shape).
- (11) Hard palate (form).
- (12) Arrangement of teeth.
- * (13) Pharynx and naso-pharynx.
 - * (a) Condition of mucous membrane.
 - * (b) Tonsils.
 - * (c) Pharyngeal tonsil.
 - * (d) Lingual tonsil.
- * (14) Larynx and trachea.
- (15) Measurement of skull.¹

$$(a) \text{ Cephalic index} = \frac{100 \times \text{maximum breadth}}{\text{maximum length}} = \frac{100 \times}{=} =$$

$$(b) \text{ Superior facial index} = \frac{100 \times \text{superior facial height}}{\text{Bi-zygomatic width}} = \frac{100 \times}{=} =$$

$$(c) \text{ Nasal index} = \left\{ \begin{array}{l} \frac{100 \times \text{nasal breadth}}{\text{nasal height}} = \frac{100 \times}{=} = \\ \frac{100 \times \text{nasal height}}{\text{nasal breadth}} = \frac{100 \times}{=} = \end{array} \right.$$

- (16) Measurement of palate.

$$(a) \text{ Index of height and breadth of palate} = \frac{100 \times \text{height of palate}}{\text{breadth of palate between first molars}} = \frac{100 \times}{=} \cdot \frac{100 \times \text{height of palate}}{\text{breadth of palate between first bicuspid}} = \frac{100 \times}{=} =$$

$$(b) \text{ Index of breadth and length of palate} = \frac{100 \times \text{breadth of palate between first molars}}{\text{length of palate}} = \frac{100 \times}{=} =$$

- 17) Measurement of septum.

(a) Distance from point of nose to posterior pharyngeal wall.

(b) Distance from point of nose to posterior edge of septum.

V.—Complicating Affections.

- (1) From the naso-lacrymal canal and eye.
- (2) From the ear.
 - (a) Chronic Eustachian catarrh with retraction.

The method of making these measurements is described in the pamphlet of instructions.

- (b) Chronic middle-ear suppuration (central or peripheral perforation ?)
 - (c) After effects of chronic middle-ear suppuration (central or peripheral perforation ?)
 - (d) nerve deafness (normal or altered tympanic membrane ?)
- (3) From the accessory cavities of the nose.
- (a) Clinical condition.
 - (b) Transillumination.
 - (c) X-ray examination.

VI.—*Heredity or Infection.*

- *(1) Patient is the child of a family of brothers and sisters; of these are alive. Is patient the only child ?
- *(2) Diseases and causes of death (special inquiry as to tuberculosis) in parents, brothers and sisters.
- *(3) Have members of the family slept together in the same bed ?
 - (a) Which ?
 - (b) To what age ?
- *(4) Family tree (it is particularly requested that this be worked out as carefully as possible).

POST-MORTEM EXAMINATIONS.

In hospitals, workhouses, etc., arrangements are to be made whereby cases likely to die soon are to be notified without delay to an organizer. The latter then makes a rhinoscopic examination, and if ozæna is found fills a report sheet while the patient is still alive. When death takes place the body is sent to the pathologist, with a notice as to the existence of ozæna, and the *post-mortem* examination is carried out in accordance with the special instructions (*vide infra*), in presence of the doctor who made the rhinoscopic examination. Owing to the frequent difficulty of expressing an opinion as to the presence of atrophy in the nose after death, it is only in some such way as indicated that the value of the *post-mortem* material can be assured. To obtain this material is one of the most important aims of the investigation, as it would assist in settling, amongst other questions, the part played ætiologically by the accessory cavities, and the mode of involvement of the cranial bones.

SPECIAL POINTS TO BE NOTED IN THE POST-MORTEM EXAMINATION OF
SUBJECTS WITH OZENA (ABSTRACT).

A. *External Inspection.*

- (1) *External signs of syphilis.*
- (2) *Palpation of the glands*, especially in the neck and at the angle of the jaw.
- (3) *Determination of the shape of the skull*¹ by comparison of greatest transverse and longitudinal diameters.
- (4) *Determination of the form of the upper part of the face* (the mandible is left out of account) by comparing the bi-zygomatic width with the superior facial height.
- (5) *Inspection of the external nose* to determine especially changes in shape. If these are marked, the full face and profile should be photographed, or better, a plaster cast of the face should be prepared.
- (6) *Determination of the nasal index* by comparison of nasal breadth with nasal height.

B. *Organs in the Neck.*²

- (1) *Incision of the skin* according to the method of Beneke.
- (2) *Inspection of the thyroid and parathyroid glands.*
- (3) *Inspection of the lymphatic glands* through which the lymph from the interior of the nose must pass.
- (4) *Inspection of the sympathetic chain, and of the cervical ganglia of the sympathetic.*
- (5) *Removal of the intact larynx* together with the tongue, pharyngeal mucous membrane and œsophagus (in the usual manner).
- (6) *Separation of the lower jaw by Beneke's method.*
- (7) *Determination of the shape of the hard palate* by comparison of its breadth, height and length.
- (8) *Determination of the shape of the hard palate and dental arch* by preparation of wax or plaster cast.
- (9) *Condition of the teeth and their relative positions.*

¹ The methods of making all the measurements required are fully described in the pamphlet.

² The organs in the neck must first be dissected out, otherwise there will not be room to use the saw for the removal of the internal nose by Schalle's or Orth's method.

(10) *Inspection of the canine fossa and of the fronto-nasal process of the superior maxilla.*

(11) *Preparation of a cast of the naso-pharynx* by means of Stent's modelling composition according to Hopmann's method.

c. *Cranial Cavity.*

(1) After turning back the soft tissues covering the head *the condition of the flat bones of the skull, the fontanelles and sutures* is to receive attention.

(2) *Section of the brain* (contents of ventricles, hypophysis, medulla oblongata).

(3) *Sagittal section of the base of the skull* by Harke's method, with preservation of nasal septum as far as possible.

(4) *Determination of the following measurements :*

(a) Height of skull ; from the middle of the anterior margin of the foramen magnum to the vertex at right angles to the horizontal plane.

(b) Length of base of skull ; from the middle of the anterior border of the foramen magnum to the middle of the fronto-nasal suture.

(c) From the middle of the anterior border of the foramen magnum to the middle of the dorsum ephippii.

(d) From the middle of the anterior border of the foramen magnum to the tuberculum sellæ turcicæ.

(e) From the middle of the fronto-nasal suture to the tuberculum sellæ turcicæ.

(f) From the middle of the fronto-nasal suture to the dorsum ephippii.

(g) The distance from the point of the nose to the posterior pharyngeal wall.

(h) The distance from the point of the nose to the posterior edge of septum.

(i) Height of nasal septum vertically from the crista galli.

(5) *Determination of the condition, length, and breadth of the nasal bones.*

(6) *Examination of the contents of the frontal and sphenoidal sinuses.* Inspection of the lining mucous membranes.

Preservation of lining membrane of the frontal sinus for microscopic examination.

(7) *Description of state of the naso-pharynx* and of the adenoid tissue there. Condition of the faucial tonsils.

(8) *Removal of the nasal fossæ* by sawing after preliminary detachment of the nasal septum by Schalle's method, or by the simpler method of Orth. According to the latter method a long thin-pointed saw is used. The base of the skull is sawn through, beginning about the middle of the clivus (clivus Blumenbachii is the basilar groove on the sphenoidal and occipital bones extending from the dorsum sellæ to the foramen magnum) and carrying a curved line of division on each side with the convexity directed outwards through the inner portion of the temporal bone, the middle fossa of the skull, the small wing of the sphenoid, and the inner part of the orbit as far forward as possible. As soon as the hard palate is reached care must be taken to keep behind the teeth. If the ear is to be examined it should be removed in the usual manner. The organs removed, after decalcification, should be cut in serial sections, as a survey of the entire process and of any localised disease is only thus discoverable. Frontal sections of the entire ethmoid afford only doubtful information as to the implication of this bone in the diseased process.

Before decalcifying the preparations it is advisable to inspect and prepare the tube and adjacent parts by Schalle's method.

D. *Thorax.*

(1) *The cartilaginous and bony parts of the ribs* are to be examined for special changes. It may be advisable to retain portions for microscopic examination.

(2) The condition of the *thymus* is to be taken into account.

(3) In examining the lungs, attention is to be directed to the *mucous membrane and cartilage of the larger and smaller bronchial branches*, with the object of determining their implication in the ozenatous process.

E. *Abdomen.*

Special attention is to be directed to the condition of the pancreas.

F. *The Long Bones.*

Macroscopic and histological examination of the marrow.

G. *Spinal Cord.*

The cervical and thoracic portions to be removed and examined.

A *post-mortem* examination is only of value when (1) the diagnosis of ozena was made during life, and (2) syphilis was

excluded by the history, clinical examination and Wassermann's reaction.

The necessary examinations in Section A (External Inspection), can be made for the most part during life. It is also desirable to take a radiograph of the accessory cavities before death, for comparison with the condition found at the post-mortem.

The questions in the *post-mortem* report aim at determining whether ozæna is as purely localised as we generally conceive it to be; they also direct attention to the study of the glands with internal secretion; finally they deal with the central nervous supply of the upper air-passages, which, together with the lymphatics, have rarely been made the subject of special study in relation to ozæna.

PERMISSION TO PUBLISH RESULTS.

Those desirous of publishing an account of their results, or of special points they may have found or worked out in the course of the investigation, are at liberty to do so. The Central Committee would be pleased to obtain copies of any such papers for incorporation in their general review of the results of the collective investigation.

RESECTION OF THE PARTIAL NASAL SEPTUM FOR DOUBLE SPHENOIDAL SINUS SUPPURATION.

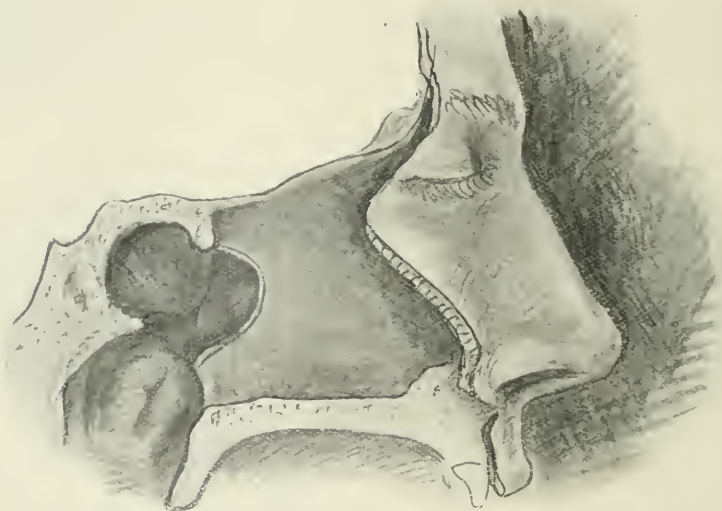
By P. WATSON-WILLIAMS, M.D.LOND.,

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It is relatively easy to make a free opening into a sphenoidal sinus by the removal of the anterior wall, including the outer portion, which corresponds to the posterior ethmoidal cells; the difficulty is to prevent the opening re-closing to such an extent that secretions within the sinus do not drain out freely. To overcome this tendency to re-closure we may remove the anterior part of the sinus floor. But in some patients, particularly where the sinus cavities are small, the bone of the floor is thick, and even when this is removed the cavity is small and tends to contract. When both sinuses are diseased I have found that the most satisfactory and certain way to ensure a permanent free opening into the sinuses is to remove the posterior half inch of the upper part of the

bony septum nasi, corresponding to the sphenoidal sinus, together with the sphenoidal sinus septum, so that a single sphenoidal sinus is formed.

Having measured the distance from the nasal tip to the anterior sphenoidal sinus wall, the septum nasi is perforated by a small bent burr or angular ethmoidal sinus forceps or other instrument, and the septum nasi and sphenoidal septum are then easily cut away. I generally use Foster-Ballenger cutting forceps for the



nasal septum portion and finish off with my small angular sphenoidal sinus forceps. Of course the anterior sphenoidal sinus wall has been previously removed. This gives a remarkably free opening into both sphenoidal sinuses, which should allow of inspection of the sinusses: they never close up again. I do not advocate the procedure as a matter of routine, but as a certain means of overcoming the tendency to re-closure after operation, which in some patients is a very difficult matter by any other means.

MINERAL-WATER AND CLIMATIC CURES IN OTO-RHINO-LARYNGOLOGY.¹

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As a rule the young specialist is unacquainted with hydrology, and the day when a client asks unexpectedly—"Where ought I to go this summer? Is X—les-Bains indicated in my case?"—he finds himself nonplussed, and does not know how to reply to this question, unless an older *confrère* may pass on to him some ideas of hydrology, or he may go on a *voyage d'études médicales*, or he has among his friends a doctor established at a watering place. He may also have read some articles in the medical periodicals, but, in general, he will be ignorant of all hydrology, and notwithstanding that no one can deny the remarkable influence of mineral-water cures in certain affections of the nose, throat and ears.

We wish to try to give here some hints on this important question, and we can only skim the subject, which is much too vast for the limited space of this review. Our object is to indicate as clearly and succinctly as possible the rules to be followed in the choice of a mineral-water or climatic station, and the local measures to be taken to complete the general action of this method of treatment.

CHOICE OF THE MINERAL-WATER STATION.

Is the cause of the infection *congestive, spasmodic, neuropathic, with a tendency to erethism*? Is it, on the other hand, *chronic catarrhal, of atonic, torpid type*? Such is the diagnostic problem set, and on the solution depends the choice of a mineral-water station to advise. As a matter of fact, in the first case (congestive type), the springs which have a sedative and depleting action should be sought: arsenical, sulphatic, calcic, arsenical and especially bicarbonated, carbo-gaseous springs. In the second case (torpid, catarrhal type) the patient must be sent, on the contrary, to sulphurous sodic waters, sulphurous sodic arsenical, sulphurous calcic, bromo-ioduretted or chlorinated sodic waters.

This division into two great pathological series of cases, susceptible of benefit by a mineral-water cure, appears a little artificial and theoretical, but practically they correspond well to thera-

¹ From *La Presse Thermale*.

peutic necessities, and, the type of cause of the affection once determined, it only remains further to decide what stations in the one or the other category are best suited to the general and local condition of the patient.

This said, we sum up in two schematic tables the oto-rhino-laryngological affections justifiable for a mineral-water treatment; affections of congestive or spasmodic type on the one part, and on the other affections of catarrhal, chronic, or torpid type.

MINERAL-WATER STATIONS ADVISABLE IN CONGESTIVE CONDITIONS OF THE UPPER RESPIRATORY TRACTS—SPASMODIC RHINITES—NEUROPATHIC AFFECTIONS—ASTHMA.

Congestive conditions with marked erethism, inflammatory ten- dency and spasmodic condition (rhinitis with reflex asthma).	}	<i>Mont Dore</i> (Puy-de-Dôme).—1,050 m. altitude. Free carbonic acid in dis- solution. Alkaline and ferruginous bicarbonates. Disiodic anhydrous arseniates. Traces of bromine. Iodine. Lithia. July 1 to Septem- ber 15.
Asthma.		
Professional congestion of pharynx and larynx.	}	<i>La Bourboule</i> (Puy-de-Dôme).—840 m. altitude. Waters very rich in arsenic. Hot.
Laryngeal and pharyngeal conges- tions in arthritics and herpetic.		
Dermatites of the meatus.	}	<i>Salies de Bagnères-en-Bigorre</i> (Hautes- Pyrénées).—Sulphatic, calcic, arseni- cal hot springs.
Cervical and tracheo-bronchial adenopathies.		
Hypertrophic, congestive, spas- modic rhinites.	}	<i>Néris</i> (Allier).—385 m. altitude.— Very hot springs, feebly mineral- ised.
Pharyngeal paræsthesia.		
Neuroses of the pharynx and larynx: glosso-pharyngeal par- æsthesias.	}	<i>Lamalon</i> (Hérault).—190 m. altitude. Thermal water (28°–50° C.). Al- kaline, ferruginous, arsenical, radio- active.
Climacteric glossodynia.		
Hyperæsthesia of the superior laryngeal nerve.	}	
Epiglottitis with whooping-cough.		
Spasm, laryngeal ictus.		

MINERAL-WATER STATIONS ADVISABLE IN CHRONIC CATARRHAL AFFECTIONS OF THE NOSE, THROAT AND EAR OF ATONIC AND TORPID TYPE—ADENOPATHIES.

Chronic catarrhal affections of the upper respiratory passages of atonic and torpid type.	}	<i>Sulphurated sodic or calcic waters</i> (s.s. or s.c.)
		<i>Arles-Thermes</i> (Ariège).—118 m. altitude; s.s.
Chronic tracheo-bronchites.	}	<i>Amélie-les-Bains</i> (Pyrénées-Orien- tales).—276 m. altitude; s.c.
		<i>Cadéac</i> (Hautes-Pyrénées).—725 m. altitude; s.s.
		<i>Canterets</i> (Hautes-Pyrénées).—930 m. altitude; s.s. hot.

Chronic catarrhal affections of the upper respiratory passages of atonic and torpid type.	<i>Eaux - Bonnes</i> (Basses - Pyrénées).—750 m. altitude ; s.s. and c. metallic, hot.
Chronic tracheo-bronchitis.	<i>Labassère</i> (Hautes-Pyrénées).—s.s. <i>Luchon</i> (Haute - Garonne).—625 m. altitude : s.s. <i>Usson-les-Bains</i> (Aude).—s.s. arsenical, cold.
Catarrh of the tympanic cavity.	<i>Ax-les-Termes</i> .—s.s. <i>Cauterets</i> .—s.s. hot. <i>Luchon</i> .—s.s.
Asthma with bronchial catarrh and emphysema.	<i>Saint-Honoré</i> (Nièdre).—300 m. altitude ; s.s., arsenical.
Infantile asthma.	<i>Marlioz</i> (Savoie).—290 m. altitude : s.e., hot.
Arthritic laryngites and pharyngites.	<i>Allerard</i> (Isère).—465 m. altitude ; s.e., cold.
Pulmonary catarrh.	<i>Engliens-les-Bains</i> (Seine-et-Oise).—s.e., cold.
Chronic bronchitic asthma.	<i>Pierrefonds</i> (Oise).—84 m. altitude ; s.e., cold.
Laryngites of torpid type.	<i>Salies-de-Béarn</i> (Basses Pyrénées). <i>Salies-de-Salat</i> (Haute Garonne).—Chlorinated, sod. bromo-ioduretted.
Adenoid hypertrophies.	<i>Uriage</i> (Isère).—Chlorinated sodic sulphuretted.
Chronic tonsillitis.	
Adenoid cachexia.	
Adenopathies.	
Hypertrophic pharyngitis (soft type).	<i>Uriage</i> (Isère).—414 m. altitude.
Buccal leucoplakia.	<i>Saint-Christau</i> (Basses-Pyrénées).—400 m. altitude. Copper sulphate.
Eczema (dermatitis of meatus).	

LOCAL TREATMENT IN MINERAL WATER CURES.

Local therapy is sometimes employed alone. In all cases it is the indispensable auxiliary of general treatment (drinks, baths, douches, foot-baths).

The doctor of the watering-place is sole judge of the local applications which it is fit to give to the patients who are confided to him ; nevertheless the treating specialist may express his opinion on this subject, and request that this or that particular treatment may be applied. Among these we must mention the nasal bath, which, carried out with prudence, so as to avoid all infection of the sinuses or of the tympanic cavity, may be of great service in cases where the stimulating effect should be reduced to a minimum : hypertrophic rhinitis, with tendency to crethism and to spasmodic type.

The *nasal bath* is indicated in the arsenical, chlorinated sodic, alkaline, and especially the sulphurated sodic thermal cure. It is,

nevertheless, expedient to remember that mineral waters are generally hypotonic, and that, consequently, it is necessary to handle them with caution in chronic coryzas and spasmodic rhinites.

The *nasal douche* finds its use in ozænous atrophic rhinites with warm sulphurated calcic waters. It is rigorously forbidden in spasmodic, congested and hypertrophic rhinites.

One of the most efficacious methods of treatment is certainly the more or less prolonged stay in an atmosphere of *medicated vapour*, such as is met with at *Mont Dore* and at *Saint-Honoré-les-Bains*. This inhalation acts specially as a sedative and decongestive. The sedative effect is very marked, and certain asthmatics find their crises rapidly disappear or lessen. As to the decongestive and resolving action added thereto, as a corollary, the cleansing action is manifested by the return of the broncho-alveolar permeability and the liquefaction of the secretions. Its ulterior effect is to produce a real increase of tone of the whole respiratory tree.

The inhalation of medicated vapours is advisable in hay fever, in professional laryngitis, and especially in asthma.

One very important fact: the mineral water not having at any time undergone contact with the air during its transit from the spring to the aspiration rooms, retains the whole of its dynamic properties, and carries with it all its gases (carbonic acid, azote, argon, helium).

The *carbonic acid nasal douche* practised at *Mont Dore* must also be pointed out, which appears to act favourably against recent anosmias of influenzal action.

At *Cauterets*, *Ax-les-Thermes*, and *Luchon* are practised *tubotympanic vaporisation*, that is to say, the insufflation of vapours emanating from hot sulphurated sodic springs into the Eustachian tube and tympanic cavity. Thus are obtained fairly good results in rhinogenous adhesive otitis and chronic tubal catarrh.

Pulverisations by battledore or sieve are recommended in peripheral pareses and paralyses of phonation (*Lamalon*, *Nérès*), in tonsillar hypertrophy and cryptic tonsillitis, large pharyngeal granulations (*La Bourboule*, *Salies-de-Béarn*, *Uriage*).

To end the series of local treatments, there remains to speak of *houmage*, a special method of personal inhalation, based on the extreme facility with which certain sulphurous waters are altered in free air and disengage spontaneously vapours which are very rich in sulphuretted hydrogen and assimilable sulphur (Baqué). This therapeutic method is much used at *Luchon* and *Ax-les-Thermes*.

These are thermal waters which rise in the sun at a sufficient temperature and in such combination that these vapours are respired without other manipulations.

Each humage room contains a certain number of apparatus, comprising a tube, to which is adapted a kind of porcelain mouth-piece which is the property of the patient; these tubes are fixed to rich coffers of white marble, constructed on basins echelloned in the vicinity of griffons, and traversed by sulphurous water which allows sulphohydrated vapours to escape. These vapours, finding a free and colder space, rise in the tube as in a chimney. The patient breathes them quite naturally, without effort, and always through the nose, the mouth being closed; he experiences a sensation of well-being, of warmth in the chest, and breathes more easily.

By processes which would take too long to describe the vapours can be varied from the triple point of view of sulphuration, temperature, and water vapour, and consequently the treatment is carried out according to the directions of the practitioner.

To sum up, liberation of sulphuretted hydrogen, carriage and deposit of sulphur in a nascent state, soluble and assimilable, the presence of rare gases (argon, crypton, xenon, neon, and helium) and powerfully radio-active. Effect produced: First stage: sedative to tracheo-bronchial erethism, very rapid. Second stage: modification of mucus, which becomes fluid and is more easily expectorated (Camy). Marcel Labbé has shown that humage clearly augments the activity of the reduction of oxyhæmoglobin, which passes regularly from 0.65 to 0.87 before the sitting to 1.08 to 1.18 after the sitting; which tends to prove that the sulphurous fumes assist the formation of hæmoglobin by placing at the disposal of the economy the sulphur which runs parallel to the iron, in the constitution of the hæmoglobin.

CONTRA-INDICATIONS.

Apart from patients suffering from uncompensated cardiopathies or tuberculosis with fever, hæmoptysis, or very extensive lesions, there is no contra-indication to a mineral water cure for an affection of the nose, throat, or ears.

There are only contra-indications to this or that station in particular. Thus a congestive rhinitis with a tendency to erethism should not be sent to Caunterets or Luchon, for the sulphurated sodic waters produce a vascular hyperactivity which will bring

about rapidly an exaggeration of the congestive phenomena. The result will therefore be exactly opposite to that sought. Inversely a rhinitis of atonic or torpid type will not get in the least better in the course of a season at Mont Dore or La Bourboule.

Among the asthmatics, not only the bad cardiacs, but also those in whom the depression of the cardio-vascular system is important, should not be sent to Saint-Honoré. The painful hyperasthenic dyspeptics cannot drink water; they do not stand it.

Mont-Dore, of which the altitude is high (1050), the climate whole, is forbidden to asthmatics who have any acute affection or continued fever, congestive or septic. They will find the soft, temperate, and regular clime of Saint-Honoré (302 m. altitude) better.

Patients who have a tendency to congestions and a too nervous excitability find themselves worse for a cure at Uriage; it is preferable to send them to Allevard or to Marlioz.

CLIMATIC STATIONS.

Sea air.—One single word on the influence of sea air in affections of the nose, throat and ears. In a general way sea air is the enemy of the nasal laryngeal and tubal mucous membranes when they are affected with catarrhal congestion.

Adenoids will be susceptible of retrogression on the sea coast. But, as Rivier¹ says, "it seems to us preferable not to try this chance for fear, in case of improvement, of an almost fatal relapse. After removal, on the contrary, children receive great benefit from a stay on the Mediterranean shore, where, exercise on the beach and respiratory gymnastics assisting, they can amplify their thoracic play relieved henceforward of every obstruction."

In hypertrophic rhinitis the best results are obtained by tepid lavage of the nasal fossæ with solutions of sea-water of 25 to 1000 (Claisse) or 33 to 100 (de Champeaux). It must be pointed out, however, that otitic complications are an express contra-indication to this method of treatment.

Ozæna itself is rapidly improved and cured by the marine cure associated with respiratory exercises. Jaubert (of Hyères) has seen, at the Renée-Sabran Hospital, two cases of old ozæna yield which were rebellious to former treatments.

Altitude Cure.—Early tuberculous laryngitis, in patients not having advanced pulmonary lesions, can only be improved by

¹ "La cure Helio-marine Méditerranéenne," Lyon, 1911.

a prolonged sojourn at a height of 1300 to 1500 m. Unhappily we do not possess in France an organised high climatic station, although Dauphiné and the French Alps do not lack appropriate sites. We are therefore forced to send our patients into Switzerland, to Leysin or Davos. There tuberculous laryngites can lead an open-air life, take sun cures and apply themselves with moderation to winter sports. Most often after four or five months' stay a notable improvement in their general and local condition is demonstrable. And this result must be attributed to the benefits of the altitude, which acts by a series of phenomena, such as:

Diminution of the atmospheric pressure.

Lowering of temperature.

Disappearance of dust and bacteria.

Remarkable purity of the air.

Great luminosity produced by the reflection of the light on the snow and the production of ultra-violet rays, to which antiseptic properties have been attributed.

Rarefaction of the oxygen, therefore greater frequency of the respiratory movements and consequently accruing pulmonary permeability; polyemia.

The contra-indications to the altitude cure are especially labyrinthine congestion with tendency to vertigo, hyper-excitability of the nervous system, repeated hæmoptyses, continued fever.

Some Practical Advice on the Choice of a Mineral Water Station—(1) Inquire as to altitude, as to the comforts to be found there, as to the therapeutic resources. (2) Give the patient confidence, for the moral factor is of great importance to the success of a cure. (3) France is incomparably rich in mineral water stations, which can suit every indication of hydrological therapeutics. (4) Choose judiciously the doctor who is to treat, and help him in his task by giving him the most circumstantial information as to the evolution of the lesions, the former treatment, the value of the patient's means of defence and his general reactional capabilities. (5) Forbid the patient to continue to occupy himself with business when away; remove from him every difficulty or every professional worry. Recommend him to avoid passing his time in the confined air of play or entertainment rooms.

It is certain that by taking every precaution with the patient and putting him on his guard against every imprudence, one will most often see him return very much improved.

**MALIGNANT DISEASES OF THE UPPER AIR-PASSAGES,
WITH NOTES UPON TWO CASES OF EPITHELIOMA.¹**

By J. PRICE-BROWN, M.D.,

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I PRESENT the subjects of this paper with diffidence, for already on three different occasions I have expressed my views and related my experience in the treatment of malignant diseases of the nose and throat to this Association. I was beginning to think it was too old and trite a story to be inflicted upon you again. Still, I had nothing else to write about, and when our President, in the exceeding goodness of his heart, intimated to me that an article upon any subject would be welcome, I concluded to try your patience once more.

I was encouraged, too, in choosing this subject, by the strong advocacy of Voltolini's views, so forcibly presented and supported by Bryson Delavan last year in his paper upon naso-pharyngeal fibroma; and particularly so when such men as Bosworth and Lincoln, Rupricht and Tomassi, Woods and Doyen, all give expression to the view that these growths should be removed by internal, not by external, operations—electrical methods of one kind or other always having the preference, when at all possible.

My argument is, judging from personal experience only, that the treatment so advocated for fibroma is equally applicable to sarcoma, and to a limited extent to epithelioma as well; and that of all methods electrical treatment is the best. It may be by electrolysis, the cautery snare or the electro-cautery knife, one or two or all these combined; but however arranged, in the hands of a skilled, careful and persistent operator, the success which will attend his efforts by these means will far exceed the beneficial results he can obtain by any other method up to the present time known.

If you can do away with the preliminary external operation in naso-pharyngeal fibroma, you can just as effectually do away with a similar operation in naso-pharyngeal sarcoma. They grow alike, have a like origin in the soft tissues of the vault, and the injury to bony structures is more frequently that of pressure absorption than of malignancy within the bone itself. These remarks do not refer

¹ Read at the Annual Meeting of the American Laryngological Association, Atlantic City, May 10, 1912.

to malignancy within the antrum, which, of course, is an involvement of the bony walls, and only amenable when practical at all to external operative treatment.

For twenty years I have advocated these views, and in the ten cases that I shall refer to, each one has been treated solely by internal methods. Of course, I do not claim originality in the plan of operation, but I do claim to be the first to have carried out the method of treatment for such a prolonged period, in so many cases and with such gratifying results.

Twenty-five years ago Bosworth and Lincoln both strongly advocated the use of the electro-cautery *ecraseur* in both fibroma and sarcoma of the naso-pharynx. Fourteen collated cases of fibroma were given, in which eleven were cured and three recurred.

Of sarcoma of the nose treated in the same way the following are reported—

Rabetsch, 1: Removal with galvano-cautery snare. No subsequent report.

Lincoln, 1: In which two operations had been previously done, followed each time by recurrence. Lincoln then resorted to the electro-cautery loop, and subsequently the electro-cautery knife, with complete success.

Schmiegelow, 1: Removed by electro-cautery snare. No return in seven months.

Major, 1: Galvano-cautery. No return in four months.

Bosworth, 1: Galvano-cautery knife. No return in a year. Also 1: Removed digitally and by enrette. No return in six months.

In naso-pharynx—

Lincoln, 1: Removed by galvano-cautery snare. No subsequent report.

Massei, 1: Galvano-cautery snare. No subsequent report.

Bosworth, 1: Cured by oft-repeated use of the galvano-cautery knife and forceps, piecemeal. No return in seven years.

My Case 1 of nasal sarcoma came to me twenty years ago, when Bosworth's elaborate treatise was new in my hand.

I need not dwell upon it now, as I reported it to this Association in my first paper upon the subject, except to say that the growth was very large, was located in the right nasal passage, that the treatment consisted in the alternate use of electrolysis and the galvano-cautery, that it took more than six months to remove it. There has been no return, and the man is still in the enjoyment of excellent health.

Ten years elapsed. Then Cases 2 and 3 came almost together. During that period the trend toward radical operation had developed. Fortunately, my experience in Case 1 had given me faith, and I tried it again, chiefly the galvano-cautery part. Case 2 recovered as the result of three months' treatment.

Case 3 required electro-cauterisation upon the site of the original growth to be repeated at intervals for six years before the tendency to return was conquered. But it is now four years since he last received treatment; and both of these men are well to-day.

Five years later Case 4 was placed under my care. The growth was removed in similar fashion. The freedom of the nasal passage was restored, and there was no perceptible recurrence; but he died two months later from septicaemia, induced partially by chronic suppuration of the antrum.

Next came Cases 5, 6 and 7, reported at the meeting of this Association in Boston three years ago. Case 5 was cured in a very few weeks by successive electro-cauterisations. The only deformity left was an internal one—the destruction of a large portion of the septum to which the growth was attached. The external nose is normal, and the man is in the enjoyment of excellent health.

In Case 6 vegetations at the site of origin of the tumour continued to recur; but these were very thoroughly burned away by electro-cautery each time that they appeared. I presume now that the vitality of the neoplasm has been conquered, for there has been no return whatever during the last nine months.

Case 7 was the one in which the common carotid was tied one year after commencing treatment, on account of excessive hæmorrhage. This is two years ago now. Although the tying of the artery saved the man's life at the time, it did not put an end to the re-development of the sarcoma; for it still persisted in showing itself at the junction of the posterior choanæ with the vault of the pharynx, calling for renewal of the cauterisations. The last, however, was done three and a half months ago, and at the present time there is no sign of re-development. Both these young men are now the pictures of robust health, as their appearance in the last issue of the *Transactions* indicated.

All these cases presented the usual classical signs. All but one were operated upon by other surgeons before coming to me. All, without exception, were pronounced cases of sarcoma by competent pathologists after careful microscopical examinations; thus verifying the clinical diagnosis.

I now come to Case 8, sarcoma of the larynx, which I reported to

this Association last year. To be brief, two weeks after our meeting in Philadelphia, the man was well enough to return to his regular occupation as lithographer, and to continue it for the ensuing five months. During all this period, however, I required to repeat the destructive operations once or twice a week. If a longer interval was allowed to elapse, the vegetations would increase so rapidly, within and without the left side of the larynx, that respiration would be seriously impaired. Still, during all this time, he enjoyed fairly good health, had a normal appetite and easy deglutition.

On January 2nd last he had a deeper canterisation than usual in the region of the left ventricular band above the vocal cords and also external to the left aryepiglottic fold. On the following day while at work he had a severe chill, compelling him to leave the shop and return home. The temperature, which had all along been about normal, ran up quickly to 104.5°F . He became very ill. Impending suffocation followed. The breath became foul, and the neck on the affected side became tender, red, brawny, and swollen up level with the jaw. It looked like a severe case of localised erysipelas with rapid extension of the disease. I considered the case at last to be hopeless, and expected a speedy euthanasia.

But a change came. In a couple of days the fever abated. The swelling commenced to go down and the patient spat off successive pieces of putrid tissue. Deglutition and respiration improved; and two weeks later the patient returned to my office in good spirits.

On examination I found that large masses of sarcomatous tissue had sloughed away. The affected surfaces looked clean and healthy, and but little of the tumour was visible.

The neck was much smaller and the glands had shrunk. I kept the case under observation, and for another two weeks there was no reaccession of growth. It looked as though the erysipelalous inflammation—*Bacillus prodigosus* like—had made a finishing case of the disease.

But it was not so. For five weeks there were no burnings. Then the life buds of the degenerate appeared again. Once more the gland commenced to enlarge. And from then until now burnings have been resumed.

Three weeks ago, as a last resort, I concluded to try the effect of radium once more, this time as an adjunct to the cantery treatment. The patient has had during this period 20 mgrm. of bromide of radium strapped on his neck over the enlarged

gland for a period in all of seventy-two hours at the rate of about five hours a day. During the same time he has had one canterisation of the laryngeal growth per week.

I can only say that the conditions are encouraging, but it is too soon to hazard an opinion on the probable result. Physically the man continues well and hopeful.

The new Cases 9 and 10 are both epitheliomata.

CASE 9.—M. F.—, plasterer, aged seventy-two, was referred to me at the Western Hospital on November 16, 1911, complaining of a large growth in the left side of the throat, which produced difficulty in swallowing, and was attended by pains shooting up into the ear.

On examination I found an ulcerated tumour occupying the place of the left faucial tonsil, including both anterior and posterior pillars, and attached to the side of the tongue and part of the posterior wall of the pharynx as far down as the back of the thyroid. The growth appeared first about a year ago, but during the last few months it had grown rapidly. As the external glands were only slightly swollen and the patient physically was in a fair condition of health, I considered it a better case for combined internal operation than for a radical external one.

The first operation was on the 19th, three days after admission. It was divided into three stages. First, under ether, at my request, Dr. Beatty tied the common carotid, in order to control subsequent hæmorrhage. Second, while patient was still unconscious, chloroform was substituted for ether, and I dissected out as much of the tumour through the mouth as I could. Third, I canterised the base of the growth with the electro-cautery at a white heat. It was impossible to remove every portion of the growth at this operation. Still, it cleared the way widely for future effort. There was much hæmorrhage notwithstanding the ligation of the artery. The patient came out of the anæsthetic well, suffered little pain, and expressed himself as more comfortable than he had been for weeks. Soft food was readily taken and he slept well.

During the next two months there were a number of cauterisations with the electro-cautery, all under cocaine, the intervals between the treatments gradually increasing in length. The last was done on January 19, exactly two months after the first operation, the intention being to destroy all re-forming sarcomatous granulations.

Three days after the last canterisation an event similar to the one recorded of Case 8 occurred. The external throat condition

became almost identical, while deglutition and respiration remained almost unimpaired. My impression was that the deep tissues of the neck, which could not be reached by operation, had become involved, and as swallowing and breathing could be carried on, the best thing the patient could do would be to return to his home in the country and under the care of his physician await the end.

Six weeks later his doctor wrote me that the neck finally broke and discharged freely, thereby relieving the patient. He was in other respects much the same, although he said that the tumour in the throat was again re-forming. The patient himself wrote me that he was coming down soon to see me, but he did not come and I am informed by his physician that the end is near. It is six months since the first operation.

The pathologist pronounced the disease epithelioma.

CASE 10, the last of the series, is a particularly interesting one.

On January 31, 1912, Mrs. W. J. L—, aged fifty-two, a lady of culture and means, formerly a distinguished vocalist, who had been a throat patient of mine off and on for twenty years, consulted me about a growth in her right nostril. It had been coming on for a number of weeks. It was much inflamed, occluding the passage and attended by stinging pains, which shot up into the ear and side of the face.

On examination I found the central portion of the inner aspect of the right alar and lateral cartilages covered by a reddish, irritable growth, the thickness of a quarter of an inch and coated with muco-pus. On cleaning the part and applying cocaine and adrenalin the growth became clearly defined. It was circumscribed and flat, leaving a clear margin of mucous membrane above and below and backwards between it and the anterior margin of the nasal bone. The nostrils of the lady were clearly defined and delicately formed, but this wing of the nose was altogether more than three times the thickness of the other in its central portion. The redness extended all over the ala of the nose outside as well as in, and the external skin was tender.

I decided, as it was growing rapidly, to operate the next day. Chloroform was administered. I then excised the growth with a scalpel. Bleeding was quite free. As soon as this abated, the patient still under the anæsthetic, I applied the electro-cantery very freely over the surface, and destroyed every portion of suspicious tissue.

The pathologist made a very careful examination of the growth and pronounced it a case of undoubted epithelioma.

On coming out of the anæsthetic the patient was fairly comfortable and declared herself completely relieved of the stinging pains. The only application was simple white vaseline.

A few days later the patient came to my office, and as suspicious granulations had formed I cauterised two or three under cocaine. Six days later this was repeated. No further development occurred for thirty-two days when spots were cauterised again. Two weeks later there was a more visible return of the growth in the form of a small ulcer on the top of an inflamed central area. So I decided to remove it again under chloroform the next day. But when twenty-four hours had passed it had trebled in size. Again it was removed by electro-cautery. In three more days there was another return, with a slight extension to the very margin of the nostril. Again the chloroform and again the cautery to each portion more effectually than ever.

Notwithstanding all these severe burnings no part of the cuticle had been sacrificed, neither had any portion of the normal cartilage been destroyed. The contour of the nose would still be perfect if the re-growth could only be arrested. But I began to realise that while the growth could be positively destroyed with the electro-cautery, it was very doubtful if by its use alone re-development could be prevented.

So I decided to call in the assistance of the radiologist. Dr. Aikins before the granulations had time to form again applied 20 mgrm. of the bromide externally, and a tube into the passage. I need not enter into the particulars of his treatment. But I may say that for the past six weeks the patient has been under our mutual control, and by careful and painstaking management, the radium having been used for several hours on a number of occasions, no suspicious granulations whatever have formed during that period. It looks at last like a cure, but no doubt careful watching will be required for some time yet to insure so favourable a result.

It may be asked why in this last case did I not resort to the use of radium at the very first. My answer is that I feared any delay might be disastrous. The delicate tissues of the nostril were so deeply involved that immediate destruction of the malignant growth became imperative, and the action of the cautery would be positively quicker than the action of radium. This I believe firmly, while at the same time it is equally clear, from the history of this case, that the judicious use of radium has prevented the re-formation of the malignant granulations.

No.	Sex.	Age.	Duration when first seen.	Diagnosis from pathological report.	Period when operations were done.	How long since last operation.	Present condition, if alive.	Result.	Remarks.
1	M.	23	4 years	Sarcoma of nose	6 months	19 years	Excellent	Cure	Never in better health.
2	M.	50	2 years	Nasal sarcoma	2 months	10 years	Fair	Cure	General break-up of system. Old age.
3	M.	21	3 years	Nasal sarcoma	6 years	4 years	Very good	Cure	Strong, stout, well.
4	M.	58	1 year	Sarcoma of nose	6 weeks	Lived 2 months after	—	Dead	No return of growth, died of septicæmia.
5	M.	35	9 months	Nasal sarcoma	2 months	2½ years	Good	Cure	Ordinary health.
6	M.	21	Several years	Sarcoma of nose and naso-pharynx	2½ years	9 months	Very good	Not yet certain	Too soon to be sure.
7	M.	18	Several years	Sarcoma of nose and naso-pharynx	2½ years	3 months	Very good	Not yet certain	Too soon to be sure.
8	M.	21	3 months	Sarcoma of larynx	15 months	3 days	Fair	Doubtful	Not much hope.
9	M.	72	Nearly a year	Epithelioma of pharynx	2 months	4 months	Unfavourable	Hopeless	Treatment prolonged life.
10	F.	52	A few weeks	Epithelioma of nose.	3 months, 2 cauterisations and 1 radium	Still treated by radium	Good health	Prognosis good	Cautery destroyed growth. Radium prevented return.

PROCEEDINGS OF THE AMERICAN LARYNGOLOGICAL, RHINOLOGICAL, AND OTOLOGICAL SOCIETY.

Eighteenth Annual Meeting, May 13, 14, and 15, 1912; Philadelphia, Pa.

Report by DR. L. M. INGRAM.

May 14.

(Continued from p. 569.)

Some Anatomical, Pathological and Surgical Observations on the Lateral Sinus and Jugular Vein.—**John F. Barnhill** (Indianapolis).—After discussing briefly the anatomical and pathological considerations with reference to the lateral sinus and jugular vein, the author discusses observations, clinical and experimental, relating chiefly to early diagnosis by surgical methods of infection of these structures. Practically every otologist whose experience is worthy of record who has expressed an opinion on the subject is of the belief that early operative interference with an infected sinus is followed by most favourable results. Early diagnosis of the presence of sinus infection becomes, therefore, of first importance in all cases in which operative measures are contemplated. Many are still of the opinion that the diagnosis of sinus thrombosis can be made with certainty only after classical symptoms have developed. In the author's experience these symptoms, with the exception of the pyæmic fever, and possibly the rigors, are never seen in the early stages of sinus involvement. The question arises, therefore, whether the surgeon should wait for the development of classical symptoms or resort at once to exploratory operation. In other words, is the otologist justified in doing an exploratory operation in a case of mastoiditis in which pyæmia is the chief symptom, and in which the probability of meningitis, brain abscess or general disease is not present? From experience he has come to believe more and more in the necessity for exploration of the sinus when other known means of diagnosis fail in the early stages of supposed sinus disease which seems to be going rapidly toward a fatal result. Acting upon this, he has obtained some of his best results in sinus surgery.

Early diagnosis by surgical exploration of the sinus, however, cannot be justified if it leads, in any considerable percentage of cases, to unnecessary opening of cranial sinuses which are not diseased, thus laying the sinus contents open to infection which does not already exist.

The question, therefore, arose in his mind concerning the amount of danger involved in exposing the sigmoid sinus in order to make a positive diagnosis.

Believing that it is sometimes the wisest plan when mastoid patients seem to be doing badly to expose and examine the sigmoid sinus, but desiring at the same time to be correct in the surgical principles involved, he conducted a series of experiments on the lateral sinus of the dog in order to ascertain the degree of ease with which infection of the vessel occurs, and the dangers resulting to the life of the animal from such operative procedures as are commonly necessary in exploring the human sinus. These experiments are detailed in the paper.

The experiments proved conclusively that this vessel, in the dog, is not easy of infection or thrombosis as a result of extensive exposure, slitting, or other traumatism when done aseptically.

In view of the clinical and experimental facts observed, the author concludes that the sigmoid sinus may be explored in case of necessity as a matter of early diagnosis without serious risk to the life of the patient, and that such exploration ought to be undertaken in a considerable number of cases in the early stages of sinus disease.

Dr. HENRY C. REIK strongly endorsed Dr. Barnhill's position with reference to exploratory operation, when in doubt after the mastoid operation. In cases where, after mastoiditis, the patient did not do well, attention should be at once directed to the sinus as the most probable cause of further trouble. In such cases exploratory operation should be resorted to. One must learn to make the diagnosis and operate for the sinus phlebitis which Dr. Barnhill described as preceding the actual formation of the thrombus. It should be understood that to injure the sinus is not necessarily serious. The experiments proved that the sinus is resistant to a large degree to infection and that exploratory operation in suspected cases is justifiable.

Death from Furunculosis of the External Auditory Meatus.—Dunbar Roy (Atlanta).—The case, so far as the author could learn, was unique. The patient was a woman, aged fifty, who, when first seen, showed characteristic swelling of the right external meatus. Prompt recovery followed deep incision. Shortly after, the left canal became involved. Improvement, but not recovery, under treatment. Headaches persisted for three weeks. Temperature and blood condition showed sepsis. The middle ear was never involved. She had one rigor. Death. Autopsy showed septic thrombosis of the right lateral sinus and organised clot in the left lateral sinus. Middle and internal ears macroscopically normal. The question of sepsis in this case depended upon its origin from the auditory canals. The author emphasised the importance of considering in the future the possible gravity of furunculosis of the external auditory canals.

Discussion on Orthodontia in its Relation to the Nose and Throat.

The Development of the Teeth and Occlusion as Factors in the Development of the Facial Bones.—Frederick Bogue Noyes (Chicago).—The author detailed his conception of the manner of growth and the changes which occur in development of the jaws and bones of the face forming the walls of the nasal cavities and sinuses, and the interaction of the various factors upon which the normal process of development depends. Phylogenetically and ontogenetically bone has been developed in the species and is formed in the individual in response to mechanical stimuli and in adaptation to mechanical environment. The fundamental considerations of the relation of the teeth and occlusion to the development of the bones of the face led to the discussion of the subject under three phases: (1) The relation of the growth of the teeth to the formation of bone in the maxillæ; (2) the relation of the use of the teeth in function to the growth of the bones of the face, it being borne in mind that, in the normal individual, the bones of the face are the result of the sum total of the mechanical conditions to which they are subjected, distributed in perfect balance and harmony through the

mechanism of normal occlusion: (3) the inter-relation of the growth of the teeth themselves and the distribution of functional forces by occlusion. Throughout growth the nasal cavity increases in depth and width by the distribution of functional forces through the bone by means of the occlusion of the teeth. The changes in the bone in growth are best illustrated by viewing the maxillæ from the median line. In the development from the infant to the adult the bones are growing under the influence of mechanical stimuli, and for full normal development vigorous normal function is necessary. It is useless to establish normal occlusion of the teeth if normal functional stimuli are not distributed by it, and it is equally useless to clear out obstructions from nasal passages if mal-occlusion renders normal function impossible.

Treatment by the Dentist Supplementing that by the Rhinologist.—A. H. Ketcham (Denver).—Failures in establishing normal breathing through adenoid operations may be made successes, in the great majority of cases, by the intervention of the dentist, for he, by gentle pressure, moves the mal-occluded teeth into normal positions and relations, stimulates bone development, increasing the size of the maxillary bones and the nose cavity. By causing normal development of the maxillary arch, the roof or vault of the mouth, and floor of the nose, a deflected or S-shaped septum—when hypertrophy, ledges and spurs are not present—is often corrected in younger patients, and benefited in the older. In order to receive full benefit from orthodontic treatment about 50 per cent. of the dentist's patients require the services of the rhinologist.

Dr. E. A. BOGUE (New York City) said orthodontia should be divided into three headings. First, the ordinary slow orthodontia, which is the kind that was described by Dr. Ketcham and is done by those dentists whose main thought is to re-adjust malposed teeth into proper alignment. A splendid work, but not what is sought for by the rhinologist. This sort of orthodontia does not have the desired influence on the nasal passages or septum, or if it does, the time employed was so great that the main object of the rhinologist to procure free nasal passages became swallowed up in that of the orthodontist, whose eye and attention were fixed upon his special part of the work. The second heading would embrace *rapid* spreading of the upper maxillary, and is, of course, applicable only to what are known as *contracted* arches—strictly arches that have not expanded normally—and consists in a rapid movement of the two halves of the upper maxillary bones, operating through the instrumentality of the teeth, and opening the suture between the two halves of the upper maxillary bone. This almost always and very promptly relieves nasal stenosis, and straightens out nasal septa almost uniformly if the patient is not too old. This spreading can be very promptly supplemented by orthodontia of the lower teeth as well as of irregular front upper teeth, bringing them into proper occlusion. The third heading comprises preventive orthodontia, and will not be considered except by those who care much more for the good they may accomplish and for the welfare of the patient than they do for their own personal profit. This preventive orthodontia is practised exclusively upon the temporary teeth of very young children, which are early drawn into the position that they ought to occupy, carrying with them the crowns of the permanent teeth lying immediately beneath them, so that when the temporary teeth lose their roots and in the process of development fall out, the permanent teeth are

already in the positions they should occupy, the antra are of approximately normal size, the septa reasonably straight, the nasal passages ample. Orthodontia of these permanent teeth will not often be needed.

Dr. WILLIAM H. HASKIN (New York City) said the subject under discussion is of great interest when broadly considered. It would be well if the rhinologist could forget the question of whether the septal deflections become straight or not, and that the orthodontist could forget the question of whether or not the median suture can be opened, and also the necessity of the regulation of the teeth. The chief question for rhinologists to consider is, can we relieve nasal obstruction by means of orthodontic methods in a reasonable length of time and at not too great an expense, the latter question being in reality of very great importance. In many cases we find that, even after removing the tonsils and adenoids, and after very successful submucous operations, our patients still experience difficulty in breathing owing to the fact that they actually have not sufficient nasal width in the anterior portion of the nose. It has been proved beyond doubt by a few pioneers among the orthodontists that this nasal width can be obtained by rapidly spreading the palatal arch in this region. Angular deflections and spurs will not be corrected by this procedure. In many instances, however, nasal obstruction will be relieved, the nose being brought into the condition frequently seen in patients with large wide nasal spaces, who do not suffer from obstruction although they may have large spurs. In the young child, if carefully examined, it will frequently be found that the septum bows to one side or the other. In these cases widening of the arch will almost always be followed by a straightening of the septum, which will remain permanent. If this were done whenever it is found advisable in the young child, we would have fewer septal spurs to deal with in later years. It has been clearly shown that irregularities of the deciduous teeth will be followed by the same condition in the permanent, and that the majority of these are due to insufficient width of the dental arches. This of itself indicates that the nasal width has not reached its normal size, bearing in mind the very intimate relation which exists between the nose and the upper arch. Another important thing, which has been spoken of in the papers, is shown in the failure of the maxillæ to develop laterally at the proper age, this condition being indicated whenever the deciduous incisors fail to separate, as they should between the fifth and seventh years, this period being the extreme limit. If we find either or both of these conditions present and correct them as early as possible in childhood, there will be fewer irregularities of the permanent teeth, there will be sufficient nasal space to allow of free breathing and in consequence the improvement of the general health will become very marked. With this improvement we should hope to see a more normal development of the whole face, with the various sinuses, but that will have to be proved by time. In children the median sutures, as well as all others, are fibrous, so that if the median is opened, all the other sutures should adjust themselves to the altered relationships, these extending throughout the face. Dr. Daly pointed out another important condition when he spoke of the possible effect upon the eyes exerted by failure of development of the maxillæ. Whenever we find marked irregularities of the mouth we have always advised that they be corrected, but this has, in the past at any rate, been done more for its cosmetic effect than for the effect it has upon the patient's health. It is only recently that the latter has begun to be appreciated, and this has caused the fuller investigations which are now bearing fruit. As what we need, in these cases, is more nasal room, and

as they already have more or less irregularity with its mal-occlusion, why are we not justified in doing merely that which we actually wish for, that is, to widen the jaw? The patients will not be any the worse for this as they already have poor occlusion, and in all probability the simple widening of the arch will secure an improvement in the occlusion.

Dr. WILLIAM SOHIER BRYANT (New York City) said the correction of nasal occlusion should begin with separation of the maxillæ and with orthodontic correction of dental mal-occlusion, and should precede all surgical rhinological interference in the matter of mouth-breathing or nasal occlusion in patients up to fifteen years of age and in special cases up to twenty-five years of age. The rapid separation of the maxillæ for the correction of nasal stenosis might well be carried out by the rhinologist. In 1906 he said that orthodontia was the most important facial orthopædic treatment yet devised. His subsequent experience has still further impressed him with the part that orthodontia plays in the proper mental and physical development of the individual. There are few children blessed with ideal symmetrical development: the great majority can receive benefit from orthodontia. Recent experience has shown that the regulation of the position of the teeth should begin in early childhood as soon as the position of the teeth can be said to be abnormal. This abnormal position can be detected sometimes as early as the fourth year. The plasticity of this early period assures the attainment of the greatest benefits with the least effort. The normal position of the deciduous teeth determines a normal development of the facial bones and nasal fossæ, as well as the normal occlusion of the permanent teeth. Later on, an arbitrarily assumed normal position of the permanent teeth, if produced artificially during the adolescent period, assures in most cases a normal development of the face and nasal cavities. The failures appear as the end of adolescence approaches. The exact time when failure is met with varies widely in different individuals. The benefits following rapid separation of the maxillæ, in cases of nasal obstruction, seem to be attainable at a much later period than the benefits of correction of mal-occlusion. Good results from the maxillary separation are certain up to the twenty-fifth year, or until the maxillary suture is firmly closed. In his opinion the effect of the surgical work of the rhinologist is at best the final course for the mature irregularities. The orthodontic work should forestall all irregular development by correction of the first signs of malposition in the deciduous teeth.

Dr. M. H. CRYER (Philadelphia) considered three points in connection with the subject: First, the opening of the intermaxillary suture; second, the relative widths of the dental arch and the floor of the nose; third, the reasons for improved nasal respiration and general health when the upper and lower dental arches have been widened. *First*, the late Professor Harrison Allen recognised that nasal respiration could be improved in cases where the upper and lower dental arches were contracted, by spreading them out to a normal width, but it is doubtful if he ever thought this could be brought about by separating the true maxillæ. The speaker had seen no evidence that the intermaxillary suture had been opened, but only that the suture between the pre-maxillæ, the interpremaxillary suture, had been separated, which is quite a different thing. Of course, many skulls of various ages may be seen, especially on X-ray examination, where the suture between the premaxillary bones has remained united throughout life, but this does not mean that it has been forcibly opened. *Secondly*, there is a general impression that when the

upper dental arch is narrow, the floor of the nose will also be narrow, and *vice versa*. In going over his small collection of bones, he finds that most of them show the reverse condition, *i. e.* where the dental arch is very narrow the floor of the nose is unusually wide, and *vice versa*. *Thirdly*, in normal people with normal arches the tongue fills the whole mouth when closed, and extends back into the oro-pharynx almost to the post-pharyngeal wall, against which the soft palate and the epiglottis rest. Now, interfere with the tongue by compressing it into narrow dental arches, and it will be seen that it is forced in the direction of least resistance, which is back into the oro-pharynx. This pushes the soft palate up against the post-pharyngeal wall, cutting off respiration through the nose, and blocking drainage and ventilation of the same. As the tongue is forced downward and backward it also interferes with oral respiration, which, however, is a little easier to perform than nasal respiration under these circumstances—hence abnormal breathing. Now, when the dentist spreads these narrow dental arches, he gives more room for the tongue, which moves forward, taking its normal position, and in turn releases the pressure on the soft palate and other structures, thus permitting normal nasal respiration, thorough ventilation and drainage, all of which conduce to an improved condition of general health. This is, he believed, the reason why the spreading of the dental arch is so beneficial, not because, as some think, the intermaxillary suture is opened and the floor of the nose widened, but because the tongue is given the room it requires and is not pushed against the soft tissue at the back of the mouth.

Dr. G. HUDSON-MAKUEN said the majority of rhinologists agreed that to correct mouth-breathing one must not only make it possible for the patient to close the mouth, but must render it easier to keep the mouth closed than to keep it open. Otherwise the patient would breathe through the mouth whether the nose be opened or not by the removal of tonsils and adenoids and the correction of turbinal irregularities and septal deviations.

Teratoma of the Naso-Pharynx.—Lewis A. Coffin (New York).—

The patient, a Turk, gave a history of having had tonsillitis twice a year, with abscess formation. Eight years previous to his appearance at the Manhattan Eye, Ear and Throat Hospital, June 19, 1911, the peritonsillar abscess had been broken with the finger by the patient's father. The patient dated his trouble from that time. There was frequent bleeding from both nares, no pain, but loss of strength for a year after the tumour appeared, after which the general condition remained about the same. There was no difficulty in eating. A portion of the growth had been removed but it soon grew to its former size. When examined it reached from the naso-pharynx to the level of the glosso-epiglottic fold. It was a large, fleshy-looking mass, hard and resistant. It appeared as a sausage-shaped mass, extending downward somewhat to the left of the median line, and attached to the posterior wall of the pharynx by a *raphé*-like adhesion, ending in a free, rounded extremity at the level of the lower portion of the glosso-epiglottic fold. A piece was removed for microscopic examination, and after the report was received the mass was dissected free from the pharyngeal wall and removed from the naso-pharynx by snare, forceps and curette. There has been no recurrence. The diagnosis of teratoma was made by Dr. Jonathan Wright, the pathologist who examined the growth.

Eight Years' Experience in Chloroform Anæsthesia in Nose and Throat Surgery.—Charles Prevost Grayson (Philadelphia).—The author's use of chloroform has been largely limited to the briefer operations of nose and throat surgery. In the eight years of experience with chloroform he has employed this anæsthetic in more than 3800 operations, with no cause for regret at having been so "daring." This experience has by no means involved the services of the expert anæsthetist, the service of the hospital interne having been habitually utilised for the purpose. He has used chloroform in a number of cases of cardiac valvular insufficiency, and in children and adults of both sexes. If the patient is in "poor condition," if he is distinctly anæmic or septic, or if he has been suffering from a long-continued suppurative process such as would have rendered him a little more liable to "delayed chloroform poisoning," chloroform has been considered contra-indicated. The "open method" of administration has always been employed—the Esmarch mask, with from four to six layers of ordinary surgical gauze stretched upon it. A 2 per cent. strength of chloroform vapour answers the purpose as a rule, but this may be lessened or increased according to requirements. Light anæsthesia is all that is necessary in the class of cases in which he employs chloroform. It is important to remember the powerful inhibitory action of the superior laryngeal nerve upon the respiratory and cardiac centres, and not to subject it to such irritation as would proceed from too rich an anæsthetic mixture. The author emphasised the fact that it is much more prudent and infinitely easier to prevent accidents than to cope with them successfully should they occur. He does not believe that cardiac failure or other more or less serious mishaps of chloroform anæsthesia, however sudden they may seem, ever occur without both warning and provocation.

Dr. JOHN W. MURPHY (Cincinnati) recalled the time, during his early practice, when the coroner in Philadelphia made the statement in a medical journal that if any doctor used chloroform and had a death he would have him indicted for malpraxis. He was interested to hear doctors of this same city declare themselves in favour of chloroform. He had used ether in his early practice, and he still advocated the use of this agent in hospital practice where the anæsthetic is administered by inexperienced attendants. In two thirds of his anæsthetic cases with children he used chloroform by the drop method, finding it much more easily given than ether. He had used it in heart lesions, and had found it safer than ether. In all infectious conditions, where the kidneys have been damaged, he considered chloroform safer than ether. It was important, in the stage of excitement, not to push the anæsthetic, as so many anæsthetists were apt to do.

Dr. GEORGE L. RICHARDS (Fall River, Mass.) believed the objections to ether unwarranted, and based upon unsatisfactory results due to improper methods of administration. The average doctor could not give ether properly. The anæsthetic should not be pushed when the patient does not go quickly under its effects, but should be started slowly without frightening the patient. Given this way ether anæsthesia progressed as rapidly, and with far greater safety, than chloroform. For very short operations chloroform was satisfactory.

Dr. HANAU W. LOEB (St. Louis) had felt as did Dr. Grayson, until he lost a patient under chloroform anæsthesia. Since that time he had never employed this agent unless it was absolutely necessary. No objection was raised to the chloroform in the case cited; the patient was a

perfectly healthy child, and the anæsthetic was administered by one of the most expert anæsthetists in St. Louis. Just as the operation was about to begin the patient stopped breathing, and, despite two hours of hard work, life could not be saved.

Dr. J. S. KIRKENDALL (Ithaca, New York) had employed chloroform for the past fifteen years, administered always by an expert, who had given it over two thousand times. He was uneasy when a novice administered chloroform. To say that every practitioner is able to give chloroform is absurd. He believed in anæsthetics being given by specialists who devote practically their whole attention to this one work.

Dr. CLIFTON M. MILLER (Richmond) had given chloroform for twenty years, in between seven and eight hundred cases, and had never seen a fatality. It was much more commonly employed in the south than in the north. In his experience the respiration was more quickly affected than the heart. He had seen the respiration entirely suspended while the heart was still beating. He deprecated the practice of turning the patient upside-down for purposes of resuscitation. One of the best methods of reanimation known to him is rapid dilatation of the sphincter ani, without stopping artificial respiration.

Dr. G. HUDSON-MAKUEN (Philadelphia) expressed his preference for ether over chloroform, and called attention to the fact that statistics show a far greater mortality with chloroform than with ether.

(To be continued.)

AUSTRIAN OTOLOGICAL SOCIETY.

March 18, 1912; *Monats. f. Ohren., year 46, No. 4.*

PROF. POLITZER *in the Chair.*

Abstract of Proceedings.

Angeo-Sarcoma of the Middle Ear, Shrinkage of the Growth under Continuous Application of Fresh Lemon-Juice.—Ernst Urbantschitsch.—A woman, aged seventy-six, shown at the Society three years ago, now after two ineffectual attempts at removal had a growth of this nature presenting at the meatus. Further operative treatment was contra-indicated on account of her age. Although the tumour did not tend to invade adjacent tissue—she had been under observation eight years—still, she was in danger from hæmorrhage, and thus it became necessary to attempt some treatment, and all manner of applications had been tried, but with no effect.

Since June, 1911, the continuous use of fresh lemon-juice had been adopted, with the result that not only had all appearance of bleeding ceased, but the growth had shrunk to about half its former size. The exhibitor suggested that this method might be tried in other like inoperable cases, and also possibly be of use in the treatment of purulent conditions of the middle ear associated with exuberant granulations.

Deafness (?) after Salvarsan.—Daniel Kaufmann.—A woman, aged twenty-two, acquired lues in 1910, was treated by inunction, but had a relapse in 1911, for which she was given an intra-muscular injection of 0.5 gr. salvarsan March 24, 1911. Prior to the injection the ears had

been pronounced normal by Beck. Soon after her discharge from hospital rapidly progressive deafness set in accompanied by dizzy feelings. Examination now showed normal membranes and middle ears, but complete deafness for watch, speech and pipe. Galvanic reaction with 8 ma. gave no response, and the cold caloric test resulted in very slight horizontal nystagmus under extreme deviation of the eyes, but unaccompanied by any subjective disturbance. She could stand or walk with the eyes closed without trouble. Whether this complete deafness was the sequel to lues or salvarsan could not be determined. The patient was having energetic anti-luetic treatment at the present time, and if no restoration of hearing occurred, it would seem highly probable that the condition was due to the drug.

In the discussion which followed on this latter point various opinions and suggestions were offered, but no accurate data were apparently, as yet, forthcoming on which to base any definite conclusion.

Abscess of the Right Occipital Lobe.—**Daniel Kaufmann.**—A boy, aged ten, otherwise quite healthy, had an attack of right earache with fever, Christmas, 1911, and was admitted to the hospital early in January, 1912, complaining only of very severe headache and dizziness. The membrane gave the appearance of acute middle-ear inflammation, but the hearing was good although spontaneous horizontal nystagmus was present. The patient was kept under observation, and on the 13th it was noticed that he was lying very quiet, quite conscious, but with a fixed stare. In reply to questioning he answered that he only had a headache. Some hours later twitching of both eyelids occurred, followed by tonic and clonic movements of the whole of the left side of the body, commencing apparently in the face. This attack, which lasted some two or three minutes, was succeeded by loss of consciousness, pupils dilated and reactionless (exaggerated patellar reflex), no neck stiffness.

Operation, which was at once performed, disclosed an abscess at the base of the mastoid, reaching backwards into the extra-dural space. Lumbar fluid normal. Immediately after the operation the patient recovered well, could speak, and gave no sign of any paralysis. The pus contained *Streptococcus pyogenes*. Normal afebrile convalescence till the fifteenth day after, when the temperature rose, pulse 120, vomiting and headache. On February 1, therefore, the temporal lobe and cerebellum were explored, but with a negative result. The boy died on February 7, and at the *post-mortem* an abscess was found in the right occipital lobe.

June 24, 1912; *Monats. f. Ohren.*, year 46, No. 7.

PROF. POLITZER in the Chair.

Abstract of Proceedings.

Syphilitic Neuritis of the Facial and Vestibular Nerves.—**Siegfried Gatscher.**—The case was that of a woman who had been sent to the exhibitor for operation on account of giddiness, headache and vomiting of some eight days' duration. The patient had suffered with a continuous left otorrhœa since childhood, and about eight months ago had acquired lues. Three and a half months ago facial paralysis appeared, which, at the present time, was to be seen in all three branches. Examination revealed a peripheral quiescent perforation, no caloric response

on the left side, and the hearing tested with the noise apparatus reduced to Cv. 1 m., Whp. 15 cm.—such, that is, as would correspond with the result of the old-standing otorrhœa.

Considerable discussion followed as to the true causation of these symptoms, and although it was suggested that the chronic aural discharge might have been responsible for them, the fact that the function of the cochlear nerve persisted whilst that of the vestibular was quite lost was held sufficient to exclude purulent labyrinthitis, and therefore the lesion was regarded by the majority as attributable to lues.

A Case of Isolated Persistent Paralysis of the Vestibular Nerve due to Salvarsan.—J. Braun.—A woman, aged twenty-seven, with a secondary rash, was given a subscapular injection of Ehrlich-Wechselmann's emulsion October 13, 1910. In December, tinnitus, giddiness and deafness appeared on the left side. Under the influence of injections (presumably of mercury) the giddiness and deafness disappeared, but the tinnitus was unaffected. A papular eruption, which occurred in November, 1911, yielded to inunction and pot. iod. The woman had now again applied for relief on account of the tinnitus and severe nocturnal headache, and on examination the tympanic membranes were found normal, and the hearing approximately normal also. Ten rotations to the right produced very coarse, slow, rotatory nystagmus, and ten rotations to the left a very marked rotatory horizontal nystagmus, whilst a very similar result was obtained with the caloric test. No disturbance of equilibration, no Romberg, ocular fundi normal. Thus an isolated lesion of the left vestibular nerve had followed the injection of salvarsan some three months after the treatment. It was noteworthy that the original affection of the cochlear nerve completely cleared up under anti-luetic treatment, whilst in this case the vestibular nerve appeared so much more vulnerable, that after two years no compensation appeared to have taken place.

H. FREY, in discussing the case, referred particularly to the statement in the last sentence, from which he said we must conclude that compensation can only occur under certain special circumstances, of which, at present, we were in ignorance.

Traumatic Lesion of the Labyrinth and Salvarsan.—O. Beck.—This case was shown to illustrate the contra-indication of salvarsan in all lesions of the inner ear other than those due to syphilis. A man, aged thirty-two, had sustained a severe head injury at the age of five, which had caused deafness on the left side. Four years ago he had been put under treatment for "secondary" symptoms, and had since then received eighty injections of "salicyl-Hg" and thirty inunctions. In March, 1912, a papular eruption appeared in the mouth, and he was sent to Beck for an otological report before being given salvarsan. Examination showed: Both tympanic membranes slightly cloudy, no spontaneous nystagmus, left complete deafness, Weber to the right; Right Cv. 7 m., Whp. 4 m., Rinne positive, bone-conduction much shortened. No response to the caloric test (both hot and cold) left. Rotation to right ten times, nystagmus 12 seconds; to the left ten times, nystagmus 14 seconds. From this occurrence of compensation to rotation combined with the deafness and loss of caloric reaction on the left, it was concluded that the case was due to an old traumatic lesion of the left inner ear, and, since a slight affection of the cochlear nerve also existed on the right side, salvarsan, according to our experience, was contra-indicated. Unfortunately, however, it was

reported that from an otological point of view there was no reason against the use of this drug, and on March 27, 1912, he was given an intra-venous injection. Fourteen days afterwards he returned to Beck with the statement that his hearing was much worse. Cv. was now reduced to $\frac{3}{4}$ m., whilst hardly any appreciation for Whp. could be detected. No improvement had taken place up to the present time.

Complete Bilateral Deafness and Loss of Vestibular Response following Influenza.—O. Beck.—A woman, aged thirty-two, who had had measles and whooping-cough as a child, but whose ears had in no way ever been affected, suffered from a sudden severe attack of influenza four years ago, during which she noticed one morning on walking that she was totally deaf, whilst giddiness was so intense that she could not stand. The giddiness gradually improved but the deafness persisted. The middle ear was normal both sides, but the loudest sounds could not be heard. No spontaneous nystagmus. Vestibular apparatus absolutely unresponsive to all stimuli on each side. No evidence of lues, Wassermann negative.

Polyneuritis of the Acoustic and Facial Nerves following Scarlet Fever.—E. Max.—A girl, aged fourteen, whose ears had previously been quite healthy, eight days after the commencement of the fever showed signs of facial paresis on the left side, and on examination a spontaneous perforation was discovered on both sides. Some days later she became deaf first on the left then on the right side. No giddiness, vomiting, malaise or nystagmus. Vestibular reaction very weak at first and then disappeared altogether. In four weeks continual bilateral tinnitus set in. Six weeks after the commencement of the illness the facial paresis was quite recovered and the left otorrhoea had ceased; the right aural discharge, however, had now only recently subsided. The vestibular nerves now showed a very weak reaction, but no improvement had taken place in the cochlear divisions.

No other cause for the lesion than the scarlet fever could be found, and the exhibitor considered that the bilateral affection, the rapid progress of the loss of function, the absence of giddiness, vomiting, nystagmus and persistent facial paralysis all corroborated the view that the solution was to be found in some toxic cause.

Old Fracture of the Base with Complete Destruction of Labyrinthine Function; Compensation; Isolated Peripheral Paresis of the Abducens.—Ruttin.—A man, aged twenty-three, four years ago was knocked down. There was bleeding from the right ear and nose. He was unconscious, had to lie in bed many weeks, was deaf on the right side, but has no definite recollection of giddiness.

Examination showed: Right ear, a peripheral patch of scar-tissue in the anterior superior quadrant of the tympanic membrane. Total deafness and complete loss of caloric response. On the other hand, after-rotation nystagmus was present and lasted ten seconds on each side. Complete peripheral paralysis of the right abducens, fundus normal; the nystagmus on this side, of course, only appeared within the limit of action of the internal rectus. Rotation with the head bent forwards induced a nystagmus of equal duration also on either side, that is, of ten seconds, so that compensation had taken place in this respect, but the induced vertical nystagmus showed the normal difference in duration, as he (Ruttin) had before pointed out, between the upward and downward directed movements.

Glioma of the Left Cerebellum with Total Atrophy of the Left Cochlear and Vestibular Nerves.—Ruttin.—The patient had suffered with headache and giddiness for about one year. A tumour of the right lobe of the cerebrum had been provisionally diagnosed, since there was paresis and spasticity of the left upper and lower extremity, choked discs (the right side being more marked than the left), and an X-ray picture showed more opacity on the right side of the brain than the left. Ruttin, however, had regarded the lesion as situate in the cerebellum or cerebello-pontine angle, since there was total deafness and lack of caloric response on the left side and a coarse horizontal-rotatory nystagmus (of undoubted central character) was present on both sides. The mental condition did not admit of testing the pointing reactions. *Post-mortem* a glioma of the left cerebellar hemisphere was found. Sections were submitted showing complete atrophy of the left cochlear and vestibular nerves, and a normal condition of those on the right side.

Glioma of the Fourth Ventricle with Advanced Deafness and Loss of Vestibular Response on the Right Side.—Ruttin.—The otological examination afforded the following result: Tympanic membranes normal, almost complete deafness for speech, and much reduced range of perception for the middle forks on the right side. No caloric reaction right, prompt response left, accompanied with giddiness. Spontaneous horizontal nystagmus towards both sides, with vertical nystagmus upwards. During the induction of the caloric nystagmus towards the right the spontaneous horizontal nystagmus was unaffected. Pointing tests normal, typical deviation after aural irrigation. The otological diagnosis thus naturally pointed to an advanced probably central lesion of the eighth nerve. *Post-mortem* a glioma of the fourth ventricle tending towards and affecting the right cerebellum was found.

The otological condition was doubtless due to involvement of Deiter's nucleus. It was interesting to compare the sections of the petrous bone in this case with those of the one just shown, since here the cochlear and vestibular nerves at the internal meatus appeared to the unaided eye as quite intact.

LEIDLER was particularly interested in this case as he was at present occupied in the effects on spontaneous nystagmus and vestibular reaction in rabbits after experimental lesions in the posterior fossa. It would appear from this case, and also, perhaps, as the result of his at present incomplete observations, that a central lesion in this situation was possible which would destroy the function of the nerve without apparent injury of the nerve itself. He hoped later to be able to give a more definite report on this subject.

Alex. R. Tweedie.

PROCEEDINGS OF THE PARISIAN SOCIETY OF
LARYNGOLOGY, OTOTOLOGY, AND RHINOLOGY.*January 10, 1911.**President: M. GEORGES LAURENS.*

Chronic Maxillary Sinusitis: Six Months' Lavage through the Alveolus without result.—**C. J. Kœnig.**—A lady, aged thirty, was sent by a dentist; diagnosis, left maxillary sinusitis. The tooth which had caused the trouble had been extracted; the patient had washed out her sinus daily through the alveolus for six months. At every lavage a little stream of fœtid pus escaped. The sinuso-buccal fistula was allowed to close, and an opening was made 1 cm. in diameter in the inferior meatus. Lavage brought away excessively fœtid pus. After fifteen washings fœtor disappeared, the return lotion became cleaner and clearer, and contained only a trace of pus falling in a single lump. Neuralgic pains from which the patient suffered continued to abate, and after twenty-eight lavages recovery was complete. The interest in this case resides in the fact that it demonstrates in an experimental manner the superiority of meatal lavage over that by the alveolar route, almost universally abandoned to-day. To all appearance, this lady might have continued alveolar lavage indefinitely without ever obtaining a cure. Why did not alveolar lavages give the result obtained by washing through the meatus? The explanation must be sought for in the fact that lavage carried out through the small alveolar opening is inadequate. The sinusal cavity is not sufficiently stirred up by the lotion, and purulent masses stagnate in the recesses of the sinus. There is also the possibility of constant re-infection of the sinus by the buccal microbic flora; but the first explanation seems to me the best. This case, the treatment of which lasted forty-nine days, demonstrates afresh that one must not be too quickly discouraged. With Caldwell-Luc's operation the patient would even then have been obliged to wash out the sinus for some time, and it is doubtful whether she would have been cured more rapidly or better.

Cylindrical Needle for Suturing the Mucosa in Submucous Resection of the Septum.—**C. J. Kœnig.**—In cases of slight deviation, limited to the cartilage, where a small incision suffices, one may dispense with sutures, but in extensive and marked deflection, where a large incision is necessary or where Freer's double incision is indicated, it is useful not only to suture, but even to resect some millimetres of the edge of the flap. Cicatrisation is more rapid and the final result is better. For in extensive deviations contraction of the flap is often insufficient and consequently it does not lie evenly. Reverdin's needles are not practical in endo-nasal surgery, they are exceedingly difficult to thread inside the nose. The needle which appears most useful is the old tubular or cylindrical pattern employed long ago in surgery. This is of great service; with it suturing is rendered very easy; the finest silkworm-gut sufficiently rigid to pass easily through the needle should be used. One can thus pass two or three sutures very rapidly.

Artificial Ear.—**M. Delaire** showed the reproduction of a left ear constructed of soft rubber, which he applied to a young man the subject of congenital malformation of the ear, in the form of a vertical cartilaginous stump. Holes were pierced through the extremities of the latter for the fixation of a gold cap, moulded to the shape of the stump and covering it. Two little gold shanks, with bolt and screw-nut, retained the cap in place. The artificial ear (which was painted) was then fixed to the cap in such a manner that its points of attachment were hidden from view.

Velo-palatine Cicatricial Stenosis, with Complete Nasopharyngeal Obstruction; Rubber Dilator.—**Dr. Guisez.**—There is a variety of cicatricial stenosis of the upper pharynx which one might term naso-pharyngeal, due to adhesion of the palate and posterior pillars to the posterior pharyngeal wall, shutting off all communication between the mouth and rhino-pharynx. It results from—(1) Burns (caustics, very hot liquids); (2) syphilitic and diphtheritic ulcerations; (3) operative traumatism. Of the four cases observed by the author two resulted from diphtheria and the others from caustic burns, and there was also present cicatricial stenosis of the œsophagus. The operation consists in reconstructing as far as possible the palate and pillars, but to prevent recurrence it is indispensable to adopt continuous rubber dilatation (very difficult to carry out) for a long period. For this purpose Guisez exhibited a kind of tube, shaped like a stud, easy to introduce by the mouth on a pharyngeal wool-holder, and which is retained in place without troubling the patient. It is constructed in various sizes according to the case.

GUISEZ mentioned his five cases of foreign bodies in the bronchi, removed a year ago (a penknife, bone, raw chestnut and a little whistle). One of these, the youngest child on whom he has had to perform bronchoscopy, was an infant who had a relatively large bone in the right bronchus. Recovery followed inferior bronchoscopy. Another, aged four and a half, had a penknife in the right bronchus, not measuring less than 6 cm., and clearly obvious by radiography. Extraction was effected by superior bronchoscopy. In like manner a fragment of raw chestnut was removed from a child during an attack of septicæmia, also a whistle from the right bronchus of another child, aged five. All these cases recovered without complication. In one case only, that of a patient operated on at the Evreux Hospital, extraction was performed, but did not prevent the patient succumbing from pre-existing complications. These cases of foreign bodies in the bronchi make up a total of twenty-two removed by the author, with twenty recoveries. In two cases extraction was performed too late to prevent infectious broncho-pneumonic complications.

Soft Self-retaining Drainage-Tube for the Maxillary Antrum.—**Dr. Collinet.**—To enable patients with maxillary sinusitis to wash out their own antra and to avoid repeated punctures, Dr. Collinet inserts a Malécot's catheter in the sinus. Adjustment of the drainage-tube necessitates preliminary puncture with a larger trocar than is usually employed. Collinet has had a trocar constructed corresponding in size to No. 11 Charrière's gauge. A No. 12 Malécot's catheter held on a steel-ended stylette passes easily through the opening made by the trocar. It is cut to the desired length and the end is concealed in the nostril. The patient can withdraw it without difficulty to practise injections. The nasal mucosa is perfectly tolerant.

Newly Formed Tympanic Membrane after the Radical Operation; Keloid slowly Developed and subsequently Atrophied.—Dr. Viollet.—Two cases are published, one of my own and the other by Dr. Davis.¹ The curious condition arising in these two cases of radical mastoid operation is the formation of a new membrane; in Dr. Davis's case it was observed in a girl, aged fifteen, two years afterwards; in mine it was completely formed in four months. In both patients the Eustachian tube had been everted. Dr. Davis had, it is true, everted the tympanic ring, but in my case the membrana tympani has been absent for the twenty years. One other point in my patient is deserving of notice: at the expiration of four months I observed a hard keloid, which disappeared seven months subsequently. It is remarkable to note what power Nature possesses in re-constructing her organs, and that, in my case, after a lapse of twenty years. Prof. Retterer has shown by numerous experiments on animals that by irritation of the cutis, such as our bistoury induces, the tissues proliferate, forming keloids.

C. A. Weill, following the communications by MM. Kœnig and Collinet, showed a patient with chronic maxillary antritis who had worn a rubber-covered meatal cannula for the past fortnight, patterns of which were exhibited. These tubes are self-retaining, being constructed on the principle of Pezzer's catheter for the bladder. The author also exhibited the metal cannula already described for the same purpose, but perfected by the addition of a movable spur, which can be projected in the sinus at will to insure its retention. The patient shown is already much improved by the daily lavages: the alveolar fistula appears closed.

G. Veillard,

H. Clayton Fox (trans.).

NOTICE.

THE SEMON LECTURESHIP.

The inaugural lectures will be delivered by P. McBride, M.D., at 5 p.m. on January 22 and 24, 1913, at University College, London.

Subject: "Sir Felix Semon: His Work, and its Influence on Laryngology."

Any Laryngological *confrères* who are able to be present will be welcomed.

Abstracts.

LARYNX AND TRACHEA.

Ryerson, G. Sterling.—**Angioma of the Larynx Cured by Radium.** "The Canadian Medical Association Journal," February, 1912.

The author reports a case of angioma involving both arytenoids, left ventricular band and vocal cord, which he treated by radium and obtained a complete cure. The treatment extended over two years, at intervals of three months, and consisted in the introduction of a disc containing 10 mg. of radium, activity 500,000, into the larynx, where it was retained for three minutes at a time.

Rogers-Birkett.

¹ Otolological Section, Royal Society of Medicine, London, March 5, 1910.

Martuscelli, Dr. G. (Naples).—Changes in the Laryngeal Nerves and Plexiform Ganglion following Compression of the Recurrent. "Archiv. Ital. di Laryngologia," January, 1912, p. 1.

The author refers to another paper published in the same journal in January, 1911, which was a preliminary note of the result of certain experiments to elucidate the causes of anæsthesia of the laryngeal vestibule. These investigations form a corollary, he says, "to the new clinical acquisitions of Prof. Massei," who, in 1903 at the sixth Congress of the Italian Laryngological Society, called attention to the occurrence of anæsthesia of the vestibule in paralysis of the recurrent. The experiments were carried out on dogs, under chloroform, and consisted in attaching pieces of laminaria to the recurrent by means of loosely-tied catgut ligatures, the object being to imitate as nearly as possible the gradually increasing pressure of an aneurysm or solid tumour. The rationale was as follows: If the anæsthesia of the larynx is due to the recurrent being a mixed nerve pressure on it at a point remote from the larynx so as to exclude the sympathetic, the anæsthesia of the vestibule will be due to a degeneration of the fibres ascending to the ganglion and descending to the superior laryngeal. If, on the other hand, the recurrent is not a mixed nerve one should not obtain in this manner any change in the susceptibility of the vestibule. The laminaria remained in position for from one to four months, when the dogs were killed. The results demonstrated that the degeneration proceeded in the manner just mentioned, showing recurrent to be a mixed nerve. A full account of the histological changes in the various structures is given with four reproductions of micro-photographs.

James Donelan.

Graeffner, Dr. (Berlin).—Rotation of the Larynx due to Aortic Aneurysm. "Zeitschr. f. Laryngol.," Bd. iv, Heft 3.

The patient was a male, aged fifty-four, who had complained for two years of breathlessness and sternal pain. The classical signs of aortic aneurysm were present. The larynx was rotated to the left through a right angle so that the outer surface of the right ala of the thyroid faced forwards. On laryngoscopic examination the right cord occupied the frontal plane, but was motionless; its free border was slightly excavated; the left cord was freely movable. *Post-mortem* the larynx returned to its normal position, thus showing that the dislocation was due to the aneurysm alone. There was a diffuse dilatation of the aortic arch and the right vagus was markedly compressed. The Wassermann reaction was positive from blood obtained *post-mortem* although lues had been denied during life.

J. S. Fraser.

Todd, Frank C.—Removal of Foreign Body from the Right Bronchus. "Journ. Amer. Med. Assoc.," March, 1912.

Dr. Todd was asked to see a patient, aged three and a half, suspected of having swallowed a foreign body ten days previously. An X-ray picture showed nothing, but as the trachea alone was exposed the negative finding was of no value. On attempting anæsthesia with first chloroform and again with ether, very great cyanosis took place and was relieved when the patient was placed in a sitting position and recurred when lying down. A bronchoscope was at once passed without anæsthesia and the dyspnoea was found to be due to an œdema of the larynx. The instrument was then passed through the larynx into the trachea. The

examination was now discontinued owing to cessation of breathing and great cyanosis. Immediate tracheotomy was performed care being taken to avoid unnecessary bleeding, a point of considerable subsequent help. As soon as the trachea was opened, and under local anæsthesia using only the smallest tube, a brass thumb-tack was found lying across the right bronchus which was too large to come away through the tubes, so tube, foreign body and forceps were removed together. A rapid and uneventful recovery ensued.

Perry Goldsmith.

NOSE AND NASO-PHARYNX.

Wilson, H. W.—A Case of Rhinitis Caseosa. "Lancet," January 27, 1912, p. 226.

Girl, aged eleven. Left naris normal. Right side: muco-pus, yellowish-white "membrane" in middle turbinate region, removable with forceps: underlying mucous membrane appeared healthy. A week's douching with alkaline lotion cleared the nose completely. Microscopically the mass consisted of long, fine needles, mixed with structureless material, with numerous microbes, pus cells and a few crystals. Bacteriologically short-chained streptococcus and *Staphylococcus pyogenes aureus*.

MacLeod Yearsley.

Trotman, Frank.—A Naso-pharyngeal Fibroma. "Australasian Medical Gazette," June 29, 1912.

The patient was a boy, aged sixteen. After preliminary high tracheotomy, and application of phagones larynx, the tumour was removed. The pedicle, one inch in diameter, sprang from the base of the skull near the root of the vomer. The pedicle was easily broken through with the finger, and the area of origin scraped with a curette. Microscopic examination showed it to be a pure fibroma with some mucoid degeneration of stellate connective-tissue cells.

[Such an easily separated attachment suggests a pedunculated polypus of the naso-pharynx rather than a fibroma.—Ref.]

A. J. Brady.

Kanellis, Smyrne.—Naso-pharyngeal Fibroma. "Archiv. Internat. Laryng., Otol., Rhinol.," November-December, 1911.

From three cases of the above condition which the author carefully describes, he draws the following conclusion: That the classic opinion that these growths take their origin exclusively from the fibrous tissue of the basilar apophysis is untenable. In the first case the pedicle was inserted into the superior and internal angle of the choana and a large part of the septum. In the second and third cases the site was slightly higher up and involved the sphenoid. Kanellis considers that rhinologists would be well advised to remove these growths *per vias naturales* even when the size would appear to indicate a bloody preliminary operation such as that of Olier. In cases where this is impossible, owing to the extreme size of the growth as in the third case, sufficient access can be obtained by Moure's incision with excision of the ascending process of the superior maxilla and nasal bone.

J. D. Lithgow.

Jacques (Nancy).—The Insertion and Site of Naso-pharyngeal Fibromata. "Archiv. Internat. de Laryng., Otol., Rhinol.," November–December, 1911.

This important paper, after dealing with the literature of naso-pharyngeal fibromata, gives the opinion of the author as to their insertion and site; his views are in accordance with those of many rhinologists. Jacques considers that they are inserted ordinarily by means of a thick bundle of leather-like tissue of parallel fibres into the most recessed part of the roof of the nose posteriorly. The most common point seems to be the anterior aspect of the sphenoid and more particularly the recessus sphenoid-ethmoidalis, whence they may spread towards the arch of the choana, the base of the vomer and pterygoid, the fossa of Rosenmüller (Moure), the ethmoid, the sphenoidal sinus and even the maxillary antrum. These diverticular expansions of the tumour are the rule; the most important and constant of all occupying the cavity of the sphenoid. In matter of frequency the ethmoidal cells are next invaded, the antrum of Highmore following; the anterior ethmoidal cells are less often affected and the frontal seldom at all. The extra-nasal prolongations may gain the cranial cavity through the nasal roof, the orbit through the lamina papyraceæ, and even, as in the case of another, the zygomatic fossa and temporal region through the distended sphenopalatine fossa. Secondary adhesions may occur wherever the tumour comes in contact with a resistant wall; above all, at the posterior edge of the vomer, these fibromata have a remarkable predilection for the left side. Before the tumour appears in the naso-pharynx the sphenoidal sinus has already been invaded some time.

J. D. Lithgow.

Turner, A. Logan.—The Spread of Bacterial Infections from the Nasal and Naso-pharyngeal Cavities by way of Lymphatic Channels. "Annals of Otol., Rhinol., and Laryngol.," vol. xx, p. 751.

An exhaustive paper of great value. Commencing with a brief review of the bacteriology of the healthy nasal and post nasal cavities, and of the common catarrhal conditions of the upper respiratory passages, Turner summarises recent work. Evidence shows that the accessory sinuses are free from bacteria during life. Interesting results of his own work (in conjunction with Esmond Reynolds) are given as to the bacteriology of accessory sinusites. The chief organisms found are the pyogenic cocci, pneumococci, *M. catarrhalis*, *B. influenzae*, meningococci, and *B. tuberculosis*. The passage of infections (*a*) from the nasal and naso-pharyngeal cavities to the cerebro-spinal meninges and (*b*) to the cervical lymphatic glands is discussed. The former are summarised as (1) suppurative meningitis (pyogenic organisms); (2) influenzal meningitis (Pfeiffer's bacillus and allies); (3) pneumococcal meningitis (pneumococcus); (4) epidemic cerebro-spinal meningitis (meningococcus); (5) acute poliomyelitis; (6) tuberculous meningitis (*Bacillus tuberculosis*). These are discussed in detail, the evidence as to the lymphatic route of infection being carefully analysed. Turner considers that the part assigned to lymphatic vessels in these cases is largely speculative and that definite pathological proof is still wanting. He then considers tuberculous infection of the cervical lymphatic glands and lungs from the nasal and naso-pharyngeal mucous membrane in detail and concludes that further investigation and observation are still necessary. There is experimental evidence that tuberculous disease of the cervical lymphatic glands may be derived from the nasal and naso-

pharyngeal mucosa, but none in support of direct extension from cervical glands to the apex of the lung.

Macleod Yearsley.

Rhese.—**Mucocele of the Sphenoidal Sinus with Remarks on the Ætiology of the Mucocele.** "Zeitschr. f. Ohrenheilk.," vol. lxiv, Part II.

Three cases of mucocele of the sphenoidal sinus are described in two of which a large defect in the roof of the sinus was present through which the pulsating dura mater was clearly seen. The condition may arise from cyst formation in the mucous membrane of the sinus but more usually from closure of the ostium, or a mucocele of the posterior ethmoidal cells may extend into the sphenoidal sinus. The occlusion of the ostium of a nasal accessory sinus may come about from trauma, periostitis, tumour formation, septal deviation, use of cautery, cicatrices, and inflammatory swelling. Following on the closure of the ostium special causes lead to an increase of secretion such as inflammatory swelling leading to compression of the veins about the narrow ostium and increased activity of the glands. The mucocele is to be regarded as a purely mechanical result of such changes. In the case of the sphenoidal sinus inflammatory changes in the posterior ethmoidal cells and in the recesses spheno-ethmoidalis, and unfavourable position and size of its ostium are the chief predisposing causes.

Lindley Sewell.

Konietzko, P. (Bremen).—**Exfoliation of a Bony Sequestrum from the Region of the Sphenoidal Sinus and the Basilar Process with Exposure of the Dura.** "Archiv. f. Ohrenheilk.," Bd. lxxxiii, Heft 3 and 4, p. 282.

The patient was a male, aged thirty-three, who had lost a leg from what was supposed to be tuberculosis of the knee-joint. Three months after the amputation was performed he began to suffer from nasal obstruction and the discharge of fœtid pus, with continuous headache radiating from the occiput to the temples. After resection of the nasal septum, the right antrum and posterior ethmoidal cells, which were suppurating, were opened up, and the symptoms underwent some mitigation. Four days later a bony sequestrum was spontaneously detached from the region of the sphenoidal sinus and the basi-occiput. The sequestrum measured 3 by $2\frac{1}{2}$ by 1 cm., and consisted of the border of the left and part of the border of the right choanæ, together with the site of attachment of the vomer, the floor of the sphenoidal sinus and a portion of the basilar process. The author suspected that the dura must have been exposed. Eighteen months later the patient returned with a recent perforation through the soft palate, and then for the first time suspicious of syphilis arose. Under anti-syphilitic treatment the lesion began to cicatrize, but ascites from cirrhosis of the liver set in and two months later the patient died with symptoms of meningitis.

Post-mortem: Purulent basal meningitis. The dura showed in the centre of the dorsum sellæ a fistula the size of a lentil through which a probe could be passed into the nasal cavities. The dura around the opening was necrotic, and further examination showed that it had been laid bare by the exfoliation of the sequestrum. The delayed appearance of the meningitis until two years after the detachment of the sequestrum was obviously due to the fact that the dura had remained intact until the syphilitic ulceration had effected its penetration.

Dan McKenzie.

EAR.

Beattie Brown, H.—Treatment of the Mastoid Wound following Influenza.—“Annals of Otol., Rhinol., and Laryngol.” vol. xx, p. 860.

The author discusses methods of treatment and obstacles to healing. The latter may be enumerated as: Delegating work to an assistant, infected sutures, failure to include periosteum in suture, failure to eradicate all diseased bone, a sinus, removal of too much bone, shock and low vitality, tonsils and adenoids, unhealthy granulation tissue, cellulitis, anaemia, diabetes.

MacLeod Yearsley.

Allport, Frank.—Some Rambling Thoughts concerning the Radical Mastoid Operation. “Annals of Otology, Rhinology and Laryngology,” vol. xx, p. 400.

Described by the author as “a gossip talk on certain aspects of mastoid work.” It is marked by some very sound common-sense, and insists strongly upon the importance of closing the tympanic ostium of the Eustachian tube. The author is strongly opposed to the Heath operation, which, he says, “never has, and never can, appeal to my sense of proper surgery.” He leaves practically untouched the diseased middle ear and the diseased attic, which in my opinion are usually the foci of all the trouble, especially the attic. His method is really not much more than an elaborated simple mastoid operation, and he hopes, with an optimistic (but not surgical) mind, that the large opening and the drainage will cure the disease. I do not believe that this hope is safe, sane, or surgical, and I therefore cannot espouse it, and would not advise others to.”

MacLeod Yearsley.

Glogau, Otto.—A Case of Spindle-celled Sarcoma of the Mastoid. “Annals of Otol., Rhinol. and Laryngol.,” vol. xx, p. 428.

Man, aged forty-five. Treated by Coley's fluid, but died. A *post-mortem* was refused.

MacLeod Yearsley.

Dench, E. B.—Division of the Auditory Nerve for Persistent Tinnitus: Operation; Recovery; Report of Case. “The Interstate Medical Journal,” January, 1912.

Man, aged forty-two, who became suddenly deaf four years earlier in the right ear, with severe headache, tinnitus, vertigo and vomiting. Treatment was unsuccessful. Left tinnitus began two months before he was seen by Dench. Tests showed: Right ear, bone-conduction absent. Upper tone limit 700 Galton, lower limit, 512 double vibrations. Left ear normal. Walking with eyes closed he fell to the right. Rotation tests showed both labyrinths equally irritable. Tinnitus being distressing, it was decided to divide the right auditory nerve. This was done with the patient on his face, through an incision from just below the spine of the second cervical vertebra to just below the occipital protuberance, then carried horizontally outwards to a point vertically above the mastoid emissary vein and thence to just below the tip of the mastoid. The flap thus formed was reflected downwards and the underlying muscles and periosteum similarly dealt with. The cranial cavity was opened with a large gouge, the opening enlarged and the cerebellar dura exposed. The muscular and cutaneous flaps were sutured in place and the preliminary

operation completed. One week later the flaps were again reflected and a dural flap formed by incision within the margins of the occipital, lateral and sigmoid sinuses. The cerebellar hemisphere was drawn upward and outward and hæmorrhage controlled with adrenalin chloride 1-3000. The auditory and facial nerves were easily recognised, the latter being recognised by the application of the faradic current. The auditory nerve was then broken up and its central end pulled out. The cerebellum was allowed to drop into place, and the dura, muscular and cutaneous flaps sutured. No reaction ensued, and the patient left hospital completely cured.

The author makes no reference to any of the work done in England, and it is difficult to understand why the less dangerous operation of destruction of the cochlea and vestibule was not preferred.

Macleod Yearsley.

Yearsley, Macleod.—A Case of Severe Vertigo: Destruction of the Labyrinth: Cure. "Lancet," February, 17, 1912, p. 428.

Patient, aged thirty-one. Discharge from right ear for eighteen months at eighteen years. Vertigo eleven years, followed by vomiting, growing worse and incapacitating her from work as a cook. Operation on May 28, 1910: radical mastoid. External semicircular canal opened and followed to vestibule. Stapes removed. Vestibule curetted. Condition on January 19, 1912: Slight occasional giddiness, never vomiting. No tinnitus. Health excellent. Slight tendency to lean to right on walking. Loses control of herself in the dark and "cannot imagine a clear space before her." The author comments upon this loss of orientation in the dark, which was noticed in another case of destruction of the labyrinth. He has not found that it is present in congenital deaf-mutes without vestibular function and suggests that the latter defect is compensated for by development of the muscular sense, which in his two adult cases has not yet had time to adapt itself to the altered circumstances.

Author's Summary.

Alexander, Prof. G.—On the Possible Effect upon the Auditory Labyrinth of the Ehrlich-Hata Remedy in the Treatment of Syphilis. "Annals of Otol., Rhinol. and Laryngol.," vol. xx, p. 441.

In the course of six years the author met with nine cases of serious affection of the auditory nerve in early stages of syphilis. Professor Finger found three cases in six months, and in these, Alexander thinks the auditory condition must be considered to have an aetiological relation to arseno-benzol. At the same time it is not yet possible to assume it with absolute certainty, as severe acute forms of auditory nerve disturbance may occur during mercurial treatment. As regards his own observations, he details one case which certainly suggests the responsibility of "606" for the auditory condition. Ehrlich's experiments on white mice with arsacetin, which produced degeneration of the central fibres of the vestibular nerve, are cited as being in agreement with Alexander's warning that caution should be used in cases already the subjects of auditory nerve-deafness.

Macleod Yearsley.

Butler, T. Harrison M.D.—Subdural Abscess, Thrombosis of the Lateral Sinus, and Diffuse Osteomyelitis of the Skull-bones, treated with Vaccines; Recovery. "Brit. Med. Journ.," March 16, 1912.

Male, aged twenty-five, seized with illness and severe headache February 8. Old right otorrhœa. Pain; headache, vomiting three days ago; no

rigor. Temperature 100° F., pulse 100. Right meatus blocked by polyp, tenderness at tip of mastoid; no tenderness in neck. The middle ear was curetted under chloroform. February 9: Patient vomited twice. Temperature 100° ; pulse 90; intermittent headache; no optic neuritis. February 10: Temperature 104° ; rigor; vomited; February 11: Radical mastoid operation; sequestrum of tegmen tympani; extra-dural abscess. Lateral sinus not examined. Pyæmic temperature followed. Injections of anti-pneumococcus and anti-staphylococcus sera. Later, further operation. Lateral sinus found thrombosed and full of pus. Cultures found only *Staphylococcus pyogenes albus* and Hoffmann's bacillus. Vaccine prepared and administered on fifth day, and subsequently. Later, abscess over left squama; sequestrum removed. Multiple abscesses of scalp: twenty operations. Final complete recovery.
C. E. West.

Meyer, J.—Further Studies on the Question of Sound-Localisation. Investigations on Infants and Animals. "Monats. f. Ohrenheilk.," No. 4, Year 46.

After extensive research on these points the author concludes that the sense of hearing cannot be regarded as in any way established till some weeks after birth in the case of the human being and that its development is gradual and in part dependent on the education of other senses. At first the infant reacts to no sound, then there is a stage when very loud sounds are noticed, as is evidenced by the movement of the eyes, which may be possibly the result of stimulation of some other sense, then sounds associated with events begin to be noted, and lastly, commencement of sound-localisation can be witnessed in the directing of the head and eyes towards the source of sound.

In adult life so many other factors must, of course, always enter into the question of hearing—such as attention, use, custom, interest, etc.—that the subject becomes extremely complex. The author discusses the results of his various experiments at length which, although affording a certain amount of academic interest, do not appear to be of much clinical value with the exception that he considers he is able to state that sound-localisation is a function dependent on the auditory sense and is not attributable to the semi-circular canals, that it is represented in the cerebrum and is quite independent of the small brain.

Alex. R. Tweedie.

ŒSOPHAGUS.

Lerche (St. Paul., Minn.)—Remarks on Cardio-spasm, with Special Reference to Treatment and the Use of the Œsophagoscope for Examination. Based on a Study of Seventeen Cases. "Amer. Journ. Med. Sci.," March, 1912.

The physiological closure of the œsophagus toward the stomach is effected, not at the cardia (the anatomical line of junction of the œsophagus and stomach), but at the "epicardia," by which name the author denotes a portion of the œsophagus, about 4 to 5 cm. in length, extending from the cardia to about the hiatus œsophagus. The term "cardio-spasm" is therefore inadequate. Cases of diffuse dilatation of the

œsophagus without anatomical obstruction can be divided into two groups. In one, spasm of the epicardia is primary and dilatation of the œsophagus secondary. The cause of the spasm may be disturbance in some neighbouring organ or irritation along the pneumogastric nerve. In the other group, atony of the œsophageal wall is primary and cardio-spasm is secondary. The author has devised a special œsophagometer for measuring the capacity of the dilated organ. The most important step in the examination is, however, by means of the œsophagoscope: without this the diagnosis of cardio-spasm *intra vitam* cannot be accepted. In some cases, on œsophagosopic examination, the epicardia remains firmly closed until induced to open by the application of a 10 per cent. cocaine solution. In no case of cardio-spasm is the "epicardia-cardia" impermeable. The routine treatment of cardio-spasm is stretching of the lower end of the œsophagus. For this purpose the author has devised a special silk-rubber bag, by means of which he exerts a measured pressure of 10 lb., dilating up to a diameter of 30 mm. The stretching, which is rather painful, may need to be repeated on one or two occasions, and treatment must also be employed to overcome the catarrhal condition of the mucous membrane of the œsophagus. With this object the writer injects a solution of nitrate of silver by means of a special cannula. He has also devised an electrode for application of the galvanic current in cases of atony. Details are given of four of the seventeen cases which have come under the author's observation. Of these four cases the first represented the typical form of chronic cardio-spasm, while each of the other three differed somewhat from the ordinary. *Thomas Guthrie.*

MISCELLANEOUS.

Cook, A. H. The Diagnostic Value of the Reaction following Intravenous Injection of Salvarsan. "New Orleans Med. and Surg. Journ.," June, 1912.

The object of the article is to combat the theory that the degree of reaction after injection of salvarsan depends on the virulence of the syphilitic infection. Several cases are given in some of which a severe reaction followed a mild infection or *vice versa*; in others a second injection was followed by a more severe reaction. The conclusion arrived at is that the reaction is useless as a gauge upon which to base treatment, and that it possibly arises from contamination of the distilled water used in the solution. *Knowles Reushaw.*

Seifert, Dr. Otto (Wurzburg).—Pemphigus. "Zeitschr. f. Laryngol.," Bd. iv, Heft 3.

Seifert speaks from twenty-two years experience as a dermatologist and laryngologist. He has collected from the literature twenty cases of pemphigus published since 1903, in which the disease was confined to the mucous membranes or, at least, began in them and only later affected the skin. Seifert gives an account of four cases of his own. Case 1 was very mild and apparently recovered. Case 2 was severe; the cheeks, lips, nasal cavities, pharynx, larynx, tongue and gums were all affected. The nose was treated with a saline wash and bismuth ointment, while the mouth was sprayed with peroxide and thereafter "scarlet red" was used. Later on methylene blue and methyl violet lotion was used and quinine was given internally, but no treatment had any effect and blebs appeared all

over the body. Nourishment only possible after the use of the cocaine-alypin mouth lotion. The patient was finally transferred to a bath of methylene blue and methyl violet; death occurred from intercurrent pneumonia. Case 3 also died from pneumonia. Case 4 had not improved at the time of the last report. Siefert advises the use of orthoform and anaesthesia in the treatment of pemphigus of the mouth and recommends pantopon solution for odynphagia. Siefert states that good results have been reported from the use of salvarsan in pemphigus, but he himself has not felt justified in using this remedy. *J. S. Fraser.*

REVIEW.

The Skiagraphy of the Accessory Nasal Sinuses. By A. LOGAN TURNER, M.D., F.R.C.S.E., F.R.S.E., and W. G. PORTER, M.B., B.Sc., F.R.C.S.E. Edinburgh and London: W. Green & Sons, 1912. Pp. 45, plates 40. 10s. 6d. net.

This atlas of skiagrams of the sinuses of the nose is a characteristic specimen of Dr. Logan Turner's work. Accurate, practical, and "objective," it covers the ground as exhaustively as the present state of knowledge permits, and it answers most of the difficulties which present themselves.

The work is methodically planned, so that the student is led in it to study first the X-ray appearances in the dry skull, next those in the normal head, and lastly those in disease. Hints are given as to the choice of instrument and position of the patient, the sitting posture with the zygoma horizontal being found the most suitable. A short description is given of Chisholm's experiments on the relative opacity of various liquids *in vitro*, and in the accessory cavities of the nose.

There are in all forty skiagrams showing typical appearances. A short series among them illustrates instructively the development of the sinuses. There are two striking illustrations of mucocele of the frontal sinus; also several of choanal polypus growing from the antrum. Attention is drawn to the point that the antral portion of these polypi may, when cystic, present a high degree of translucency to ordinary transillumination, though relatively cloudy on radiographic examination. The difficulty in deciding in cases of cloudiness of all the sinuses is candidly considered, as also the room for doubt in the interpretation of the signs when the vertical portion of the frontal sinus is unusually shallow. The best means of overcoming these difficulties is clearly discussed.

The chapter forming the introduction to the atlas forms a most concise and instructive review of the subject, and the results of the authors' experience are summed up in a set of clear and definite conclusions, which the student may study with great benefit, and which the expert will find well worthy of attention. The authors dwell with characteristic modesty and candour on the limitations of the method and on the necessity for considering its data in the light of the other clinical evidences. Their work will certainly tend to widen the limits of skiagraphy in the examination of the accessory nasal sinuses. The remarkably moderate price at which this valuable atlas is offered places it within the reach of every student of rhinology, and it will be on that account all the more likely to extend the practice of radiographic methods.

Dundas Grant.

OBITUARY NOTICE.

By the regrettable death of Dr. Edward Woakes, which took place on September 30, our speciality loses one of the band of ardent and enthusiastic pioneers whose devoted labours have prepared the way for a succeeding generation of workers. A quarter of a century has passed since Woakes was the centre of a controversy which almost reached cyclonic dimensions. The din and the dust of the conflict aroused by "necrosing ethmoiditis" have long since died away, but the figure of the protagonist still stands out as that of a man whose views, though perhaps not altogether accepted, will nevertheless always command attention from the historian of rhinology as one of the starting-points in the evolution of nasal pathology. His original building may have disappeared, but some of the stones he hewed have gone into the new edifice.

Dr. Woakes, the son of a medical man, was born at Luton, Bedfordshire, in 1837. His student days were passed at St. Thomas's Hospital, where he had a brilliant career, qualifying L.S.A. and M.R.C.S. in 1858. In 1860 he took the M.B.(Lond.) and in 1863 the doctorate. After several years of general practice in his native town he migrated in 1876 to London and began the practice of otology and rhinology. His ability and energy soon procured for him a post on the staff of Golden Square Hospital, and, later, the appointment as Senior Aural Surgeon to the London Hospital. After leaving Golden Square he took a prominent part in the foundation of the London Throat Hospital, Great Portland Street, of which he was Consulting Surgeon at the time of his death.

His published articles and works are numerous, and many of them have had a wide circulation.

Dr. Woakes leaves a family of a daughter and two sons, one of whom is a well-known member of the profession his father so long adorned. We most respectfully tender to them our deepest sympathy in their irreparable loss.

NEW REMEDIES.

Adrenalin Gauze Tape, Sterilised, produced by Messrs Parke, Davis and Co., London, promises to be very useful to the surgeon as a hæmostatic dressing, swab or tampon. It is prepared by impregnating tape lengths of soft gauze (sterilised) with 1 in 2000 solution of adrenalin chloride, and packed in sterile air-tight glass jars furnished with aluminium screw caps, through which any desired length of tape can be withdrawn whilst the bulk remains unexposed. The edges are selvaged, thus avoiding the annoyance of loose strands. Adrenalin Gauze Tape is supplied in two dimensions, either 10 yards of $\frac{1}{2}$ inch or 5 yards of $1\frac{1}{2}$ inches width.

BOOK RECEIVED.

Diseases of the Throat, Nose, and Ear, for Practitioners and Students.
By W. G. Porter, M.B., B.Sc., F.R.C.S. Ed. Bristol: John Wright & Sons, Ltd., 1912.

THE
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RHINOLOGY AND OTOTOLOGY.

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"THE MASSACRE OF THE TONSIL."

UNDER this title, which our cousins across the Atlantic would probably term a "scare-heading," Dr. John N. Mackenzie, of Baltimore, has recently written an article which has attracted much attention and evoked not a little discussion in his part of the world.

Limitations of space prevent us from publishing his paper in full, but a useful abstract of it appears at p. 682 of the present issue of the JOURNAL OF LARYNGOLOGY, RHINOLOGY, AND OTOTOLOGY, although, as a matter of fact, no mere abstract could ever convey a tithe of the invective and wit of the original.

It seems that in certain parts of the world the tonsils are removed for the cure of all sorts and conditions of maladies, systemic as well as local; that the operation, in short, is performed with more zeal than discretion. To quote Dr. Mackenzie, "the chief and most glaring abuse in the laryngology of the present day" is "the indiscriminate and wholesale destruction and removal of the tonsils." "Never," he goes on to say, "never in the history of medicine has the lust for operation on the tonsils been as passionate as it is at the present day," when "the minds of the younger generation of operators have been poisoned by wild and incontinent talk" as to the diseases induced by these organs.

This is strong language, and it is not yet, we imagine, applicable to British practice, save, perhaps, in one or two localities. But, lest

we also should fall victims to an irrational though fashionable craze, we commend Dr. Mackenzie's strictures to the careful consideration of our readers.

It is a truism that all indiscriminate operating is unscientific and harmful. But it is a truism which many latter-day throat-surgeons seem to be in danger of forgetting when they teach and practise the complete removal of the tonsils, not only for simple hypertrophy of the gland, but also with the object of curing constitutional disorders which cannot be referred to the tonsils save by some imaginative *tour de force*.

Dr. Mackenzie in his pamphlet seems to us not to distinguish with sufficient clearness between the partial removal and the complete removal of the tonsils, probably because of the general tendency nowadays to practise exclusively the latter operation. To us in this country, however, the question as to which should be the routine operation—when operation is necessary—is not yet regarded as settled, and probably it never will be, save in the sense that it is unwise to regard any operation as a routine and applicable to all cases.

Complete removal has its uses, but the need for its performance should be clear and unmistakable. If there is any doubt as to its necessity then the simpler operation should be selected, for the good and sufficient reason that the latter is safer, and generally speaking quite efficacious.

Dr. Mackenzie probably has tonsilleectomy and not tonsillotomy in his mind when he says that removal of the tonsil "is a capital operation, a dangerous operation," which has to its credit "a long roll of unrecorded deaths." "It occasionally happens," he caustically remarks, "that the resurrection of a 'buried' tonsil is followed by the burial of the patient."

To express a preference for partial removal in certain cases may seem to many to be old-fashioned and out-of-date, but the reasons are plain enough. Too much, perhaps, may be made of the assumption that the tonsils subserve some special use in the economy. But there is no denying the fact that enucleation is an operation more serious than partial removal, and therefore only justifiable when the symptoms are sufficiently serious to call for it. Too little heed has been paid to the greater tendency to sepsis after tonsilleectomy, to the more tedious convalescence, to the frequently deforming cicatrization, and to the risk of damaging the voice.

A temperate consideration of the facts, therefore, cannot fail to enlist the sympathies of all save the fanatical tonsillectomists on

Dr. Mackenzie's side in his crusade, and although the indications he gives for operation may seem to err on the side of caution, nevertheless, even an extreme of caution boldly expressed is welcome if it succeeds in instilling a little doubt into the closed and over-confident mind.

The subject of tonsil operations has been selected for one of the discussions at the forthcoming International Congress of Medicine in London, and, before that occasion, intending speakers would do well to scrutinize the foundations of their belief in the light of Dr. Mackenzie's pamphlet before proclaiming themselves to be out-and-out supporters of the routine practice of total extirpation of the tonsil.

TRUE SEROUS LEPTO-MENINGITIS CURED BY OPERATION, WITH CONSIDERATIONS ON THIS INTERESTING OTITIC COMPLICATION.¹

BY PROF. S. CITELLI,
Catane.

Translated by MACLEOD YEARSLEY, F.R.C.S.,
Senior Surgeon to the Royal Ear Hospital, etc.

I CONSIDER that this case should be published as much on account of the diagnosis being found correct, as of the happy issue to a sufficiently uncommon intervention; I shall take this opportunity to devote myself for making as well certain remarks concerning an otitic complication upon which still exists a certain amount of confusion.

To begin with I will report the case:

A girl, aged fifteen, affected since infancy with a foetid suppuration of the left middle ear; she consulted specialists, who all had recourse to medication. In June, 1907, the family noted that the pus was less abundant, though retaining its offensive odour; it dried up almost completely in the month of August. A length of gauze impregnated with formalin was always inserted in the meatus, to be withdrawn whenever the smell penetrated through it. The patient had never complained of pain in the ear, and she showed no syphilitic stigmata. Information was given that a sister of the patient had been carried off by a leptomeningitis a few days after a curettage of the tympanum, done by a *confrère* for a chronic granular suppurative median otitis.

The parents reported that in August, 1907, following a rheumatic crisis, the

¹ From *Les Archives Internationales de Laryngo-otologie, d'Otologie et de Rhinologie*, January-February, 1912, p. 71.

patient complained of violent pain in the left ear and of cephalalgia with 104° F. of fever. The temperature fell under the influence of aspirin, but the earache increased and became diffused over the whole half of the head. The pain then attacked the side of the vertex and occiput, the nape of the neck became completely rigid, and the pain spread to the thoracic spine. The fever oscillated in the neighbourhood of 100° and the cervical pain increased, with the accompaniment of vomiting and sensorial depression. The patient was in this condition when I saw her on August 17.

The left membrana tympani was almost totally destroyed, and the tympanum, of which the labyrinth wall was covered with granulations, was almost entirely dry. I introduced a wool tampon in order to make sure of the existence or not of secretion, and I withdrew it, not moist, but giving off a nauseous odour of putrefaction. The child replied badly to questions put to her (seeing the serious psychic disturbances to which she was a victim), but pressure caused pain over the antrum and the corresponding mastoid emissary vein; notwithstanding that the mastoid region had a normal aspect. The neck was rigid, and attempts at moving neck or head determined lively suffering. Kernig's sign was fairly clear; although the patient was restless I examined the fundus oculi and recognised an optic neuritis more marked in the left eye, on which side, according to the family, the vision was weak.

Seeing the grave condition of the patient I could not prolong my examination. Evening temperature 103° F. Threatened rigors. Urine normal.

From the symptoms it was evident that a serious endocranial complication existed certainly related to the aural suppuration, and one was able to conclude almost infallibly the presence of a lepto-meningitis. In spite of the gravity of the patient's condition, and although the prognosis of otitic lepto-meningitis is always unfavourable, I proposed operation with little delay; accordingly the family accepted this procedure, which took place the next morning at 8.0 a.m.

The antrum (small and deep) and the aditus were crammed with foetid, caseous pus; of the large ossicles there remained only the head and a fragment of the neck of the malleus. The sigmoid sinus (projecting in its upper portion to the point of almost totally covering the antrum) was bathed in a small quantity of pus, but it was granulating and separated from its groove about its lower part. Behind the sinus, to the extent of about 2 sq. cm., the cerebellar dura mater was also strewn with granulations, invaded by the pus, necrosed and softened. I found a healthy portion of the middle cerebral fossa. The external semi-circular canal was normal and the labyrinth wall of the tympanum was scarcely touched. No other labyrinth appearances.

Radical Operation.—I laid bare the sigmoid sinus throughout its extent and reached the jugular bulb (Grunert's method), then I uncovered the whole zone of pachymeningitis of the cerebellar fossa until I touched healthy dura mater. Neither sinus nor cerebellar dura mater exhibited pulsation; nevertheless, in the absence of pyæmic symptoms, I did not open the sinus, reserving incision of the cerebellar dura mater for a second operation, as in the case of periostitis and of meningitic symptoms. Contrary to my habit in the radical operation I did not scrape the tympanum, and I powdered the wound with iodoform (particularly the sinus and the altered cerebellar dura mater). Finally, with the double object of diagnosis and treatment, I had recourse to lumbar puncture, which yielded about 20 c.cm. of cerebro-spinal fluid under decidedly increased pressure; the fluid was clearly transparent, but slightly opalescent. I let some drops of this fluid fall directly into culture tubes (bouillon and gelatine), and kept the remainder for microscopic examination.

The culture-tubes were kept in the incubator for three days and remained completely sterile; microscopic examination, on the contrary, revealed clear signs of leptomeningitis—in fact the centrifuged fluid contained numerous leucocytes and a fairly large quantity of polynuclear bodies. Pus from the operation area contained staphylococci and diplococci.

The evening of the operation the patient replied to questions put to her better than formerly and she vomited no longer. The temperature fell from 103° to 101°. Next day the general condition continued to improve, and four days after the operation, the fever, the psychic depression and the spontaneous pain ceased totally; movements of the neck alone caused a slight pain, which disappeared entirely at the end of several days. Vision returned to normal, Kernig's sign ceased, and the wound behaved in such a fashion that at the end of three months a complete cure was obtained without any sequelæ resulting from this serious illness; only the hearing on the side of the lesion did not pass beyond 15 cm. for the whisper.

In this case, apart from the clinical phenomena, the cyto-diagnosis of the cerebro-spinal fluid furnished us with the certain proof that a lepto-meningitis in the serous stage existed, which would have undoubtedly become purulent if an operation of urgency had not been performed. The clinical signs alone allowed the diagnosis of a lepto-meningitis, seeing that the fever, the vomiting, the pain caused by movement of the neck could be explained by the perisinusitis and the sinusitis which extended to the neighbourhood of the jugular bulb; the diagnosis was emphasised by the marked rigidity of the neck, the hyper-sensibility of the thoracic spine, Kernig's sign, and especially by the psychic confusion. We know that patients retain their mental clearness almost to death in the most serious cases of thrombo-phlebitis of the sigmoid sinus associated with pyæmia; the complete rigidity of the neck could only be explained, on the other hand, by a lepto-meningitis (especially in the absence of phlebitis of the jugular vein). Nevertheless, the cyto-diagnosis gave us the sure proof of the presence of a lepto-meningitis; in fact, the opaline tint and the increase of pressure of the fluid, the existence of numerous leucocytes, and particularly of polynuclear bodies, characterised this condition.

In our case, the lepto-meningitis was induced either by bacterial toxins, or by the transient stay of some poorly virulent germs in the cerebro-spinal fluid; in like manner the inflammation would have reached the subarachnoid space probably though the cerebellar pachymeningitis zone, a zone affected, as we have pointed out, by a necrosed region, through which the germs would penetrate next in sufficient quantities to light up a purulent lepto-meningitis. Given the absence of septic thrombo-phlebitis of the

sigmoid sinns and labyrinth phenomena, the lepto-meningitic irritation was produced solely by this route, thus explaining the violent occipital pain and cervical rigidity noted at the commencement.

Considerations and Remarks on Otogenous Serous Lepto-meningitis.—We have, therefore, had to do with an otitic serous lepto-meningitis; but not in the benign sense considered by Lévi, or from the wide point of view admitted by Jansen, and especially by Merkens, but with an acute lepto-meningitis constituting the initial stage of a suppurative lepto-meningitis.

In fact, after Quinke had defined the morbid aspect of the serous meningitis predisposing to hydrocephalus, Lévi¹ tried to demonstrate that a serous meningitis (characterised by an afflux of aseptic liquid to the subarachnoid space, or to the ventricular cavities) could be equally related with chronic suppurations of the ear, or of caries of the temporal; as exemplified by the serous plenisy which can arise in case of caries of the ribs, and the serous effusion which occurs in the articulation of the knee in a case of osteomyelitis of the diaphysis and of the epiphysis of the femur. This variety of hydrocephalus or of hydrocephalic serous lepto-meningitis might cease spontaneously (by the resorption of the pathological fluid) after the cure of the otitis; or degenerate into acute fatal meningitis following the extension from the bone focus and the penetration of infective germs into the arachnoid fluid. To the support of his contention, Lévi brings personal observations and cases borrowed from other authors in which, in the course of an otorrhœa, are seen to blaze out, almost always without fever (during months or years), meningitiform crises associated with headache, vertigo, cervical rigidity, optic neuritis, vomiting, disturbances of speech and various motor phenomena, which are repeated at irregular intervals, and cease sometimes on the cure of the otorrhœa, whilst they are sometimes fatal, principally when the secondary infection of the arachnoid fluid brings about the metamorphosis of the torpid serous meningitis into subacute suppurative meningitis. It will be remarked that in these patients, even in the cases where the existence of an otogenous serous lepto-meningitis is admitted, the microscopic and bacteriological examination of the arachnoid fluid is almost never made.

Following Lévi, Merkens² concludes that, just as with a

¹ Lévi, *Zeits. f. Ohrenh.*, 1895.

² Merkens, "Ueber intracranielle Complicationen der Mittelohreiterungen," *Deuts. Zeits. f. Chir.*, t. lix.

furuncle, there is often formed a collateral œdema about the infected spot, referable to the diffusion of bacterial toxins in the neighbouring regions, the same occurs in the case of an infectious focus in the temporal. If the zone of the collateral œdema abuts on the lepto-meninges, there, as the toxins penetrate by the vessels, the lepto-meninges react by pouring out aseptic serous fluid. If this pathogenesis and the relative frequency of these lesions be admitted, Merkens, confirming and extending the views of Jansen, considers otitic serous lepto-meningitis frequent, contrary to Lévi, who believes it to be rare.

Thus Lévi, then Jansen, and especially Merkens, imputes to true toxic serous lepto-meningitis, clearing up spontaneously or by a very simple operation, a number of diagnostic symptoms like the cases of *meningismus*, which are of fairly common observation (particularly in children, and generally in subjects who react easily) in the course of simple tympanic suppurations, mastoiditis and foreign bodies in the ear.

Henceforth, while it may be logical thus to explain the mode of development of otitic serous lepto-meningitis, it is well to remark that not only has the existence of this morbid condition never been demonstrated in the cases of Lévi and Merkens, but that, further, the method of observation of the latter seems to me much exaggerated. Be that as it may, the greatest confusion reigns on the subject of otitic serous lepto-meningitis; in fact, whilst on the one hand numerous authors (Körner, Luc, etc.) still doubt the reality of this otitic complication, on the other hand there are ranged under the term "otitic serous lepto-meningitis" cases dissimilar and showing divergences, as much from the pathogenic point of view as by their evolution and their gravity.

This said, with the object of lessening the actual uncertainty, I hope to do useful work in bringing to mind certain views on the pathology of the meninges and the ventricles before discussing more practical considerations.

I would insist principally on the most important causes which, apart from congenital or acquired hydrocephalus, can (by the more or less rapid increase of the subarachnoid or ventricular fluid) engender meningitic or meningitiform symptoms. In my opinion most of the authors who have spoken of otitic serous lepto-meningitis have admitted too lightly the existence of this trouble, every time that the rapid increase of the cerebral fluid (sometimes rather attributable to general lesions than to the ear) has caused meningitic symptoms in individuals affected with aural suppuration.

On the contrary, every time that an increase of the meningeal or ventricular fluid is suspected in a patient attacked by an aural suppuration, it should be remembered that *not only simple serous lepto-meningitis, but even multiple localised or general pathological changes can cause increase of the meningo-ventricular fluid.*

In fact, if disturbances of the circulation or alteration of the vascular walls bring about an abundant transudation of the cerebral fluid unable to be averted by corresponding increase in the lymphatic flow, a meningeal or ventricular or mixed dropsy is produced, associated with a cerebral œdema. Meningo-ventricular dropsy is observed in cases of cardiac weakness, or in embarrassment of the pulmonary circulation, or by the compression or thrombosis of the internal jugular, and also following thromboses or compression of the sinuses of the dura mater. Circumscribed œdemas are often verified about thrombosed veins, hæmorrhagic foci, cerebral tumours and abscesses (especially if these latter are encapsuled and remote from the subarachnoid spaces and the ventricular cavity). Numerous authors admit also that severe cerebral congestions (increasing the intra-cranial pressure, and consequently compressing the veins) can cause œdema. Finally, in children and individuals reacting strongly these cerebral congestions, accompanied by meningitiform crises, can be determined by reflex paths, by irritative causes acting upon the ear (retention of pus, foreign bodies, etc.) or on other organs. Evidently, in all these œdemas caused solely by the obstruction to paths of filtration of the cerebro-spinal fluid, the effects of compression are manifested more or less quickly without the possibility of a question of serous lepto-meningitis.

Besides these retention dropsies, one also meets with cases of meningo-cerebral œdema of toxic origin, due to lesions of other organs; they are observed chiefly in patients suffering from nephritis or intestinal intoxications.

On the other hand, it cannot be categorically denied that there exists true acute serous lepto-meningitis of aural origin, whilst there exists an acute serous lepto-meningitis consecutive to general infections, injuries, cerebral, nasal, orbital infections, etc. In both cases, a phlogistic œdema of the meninges is produced, and it can also produce an accumulation of fluid in the ventricles (acute ventricular dropsy).

From the above, it results that the phenomena of the meningitic gait does not prove the existence of a lepto-meningitis, for the meningeal or ventricular dropsy which produces this symptom can

be started as well by a true lepto-meningitis as by a simple retention œdema. Obviously these two different processes differ from the point of view of pathogenesis, prognosis, and treatment; it is necessary, also, as much in pathological as in clinical work, to take this divergence into account and to seek the means of making a correct diagnosis.

When a patient with an aural suppuration presents symptoms simulating a lepto-meningitis (symptoms susceptible of spontaneous cure and of relapse, to be cured again or to degenerate into a fatal lepto-meningitis), one should be careful not to diagnose an otitic or otogenous serous lepto-meningitis at once, seeing that, in certain cases (particularly those which are cured spontaneously), one may have to deal with retention œdemas or with reflexes rapidly brought about by variable general or local causes. Even in cases where several meningitiform crises have brought with them a purulent lepto-meningitis, it is not proved the case has been one of a serous lepto-meningitis from the beginning having degenerated into a purulent one; it may be possible that the terminal otitic purulent lepto-meningitis may not offer any pathogenic analogy with the attacks of meningitic form which preceded it, and which could not have any relation to the aural lesion, or, whilst maintaining relations therewith, was caused by retention or reflex œdema, and not by a phlogistic œdema.

When, consecutive to the aural suppuration, it is noted that the organism is attacked by an acute or chronic general infection (measles, scarlatina, influenza, acute rheumatism, tubercle, syphilis, etc.) or by an infection of other organs (pneumonia, typhoid fever, etc.), so that a lepto-meningitis appears suddenly, it will often be found that it is difficult to recognise whether the lepto-meningitis is referable to the aural suppuration and its complications or to other infections.

If the authors who have investigated the subject of otitic serous lepto-meningitis had considered all this, it would not have been believed that this otitic complication was so frequent, and one would have avoided publishing observations which scatter confusion in the signification.

I shall not undertake the criticism of all the cases included in the category of otitic serous lepto-meningitis, the more so that few autopsies have been made at the serous stage, and that the cyto-diagnosis of the cerebro-spinal fluid having almost never been done, the principal element of the differential diagnosis is wanting; but I shall point out that a certain number of cases collected by

Lévi, Bœnninghaus,¹ and Körner,² which have been published recently by other authors, cannot stand severe criticism based upon the above-mentioned criteria. In the greater part of these observations, the meningeal or ventricular dropsy (if it existed) has possibly been a retention dropsy of otitic origin (by parietal or complete thrombosis of a vein or sinus, by endo-cranial compression exercised by an extra-dural, intra-meningeal, or encephalic abscess, an abscess acting mechanically or reflexly, or by a reflex congestion of the meninges); it is sometimes a question also of a retention, or even an inflammatory dropsy (due to a serous lepto-meningitis), not of otitic nature, but caused by other lesions or infections evolved simultaneously in the organism. These are admissible doubts, especially in cases of spontaneous cure, or if fever is absent, or even when cure follows puncture of the lateral ventricles and meninges, and if neither labyrinth caries nor endo-cranial complications are found on the operating table, and can be made responsible for the probability of inflammation of the lepto-meninges or ventricles in relation with them.

For example, if the four recent observations published by Mück³ under the title of "Otitic Serous Lepto-meningitis" be submitted to a rapid criticism, it must be pointed out that in the first case it should rather be considered as a lepto-meningitis, not of otitic, but of syphilitic origin; indeed, the patient was a victim of specific manifestations, for which she had not been treated. Further, on operating, no bony or endo-cranial lesion was found (save a mastoid congestion) and the meningeal symptoms relapsed before anti-syphilitic treatment was undertaken. The author attributes the latter relapses to a nephritis of recent occurrence.

In the third case (there existed nothing in the cranium or mastoid, beyond congestion) the condition was probably one of meningeal œdema by retention, bearing no relation to the acute median otitis, but due to cardiac weakness; a serous tuberculous meningitis might also be admitted, the patient being the subject of tuberculosis of the apices. (Acting on the advice of Körner, the author practised lumbar puncture in the two latter cases, examining the fluid removed bacteriologically, but without making a cyto-diagnosis.) The fourth patient, beyond the otitis and mastoid

¹ Bœnninghaus, "Die Meningitis serosa acuta: Eine Kritische Studie" (Wiesbaden, 1897).

² Körner, "Die otitischen Erkrankungen des Hirns, etc." (third edition, 1902, pp. 58-62). Appendix to the third edition, 1908, pp. 28-29.

³ Mück, "Beiträge zur Kenntniss der otogenen meningitis serosa," *Zeits. f. Ohrenh.*, etc., t. lxii, pp. 221-227, 1910.

suppuration, showed a scarlatinal septicaemia, which resulted in a synovial effusion and a pleurisy and terminated fatally. Even in this case Mück doubts that the serous leptomeningitis did not come from the general infection and not from the ear. The second observation is not very convincing, having been incompletely studied.

It is conceivable that in classifying under the name of otitic serous leptomeningitis cases which demonstrate so little and are incompletely studied, like those of Mück, our knowledge of the subject of this otitic complication would be marked with confusion.

To clear up the uncertainty which reigns over the subject of serous leptomeningitis, it is necessary not only to take account of the pathological and clinical facts already described, but also to point out the clinical and microscopical methods capable of helping us to discern serous leptomeningitis in the forms in which the true phlogistic process, lepto-meningitic or ventricular, does not exist. In the cases in which the lepto-meningitis is accompanied by infection, not only of the ear but also of other organs in general, one will rank among the otitic serous lepto-meningitis the only points in which one will establish the relations existing between the ear and the lepto-meningitis. It is thus that we can support on the most solid bases the knowledge relative to the eventuality of this otitic complication.

Practical Method which often allows the Making of the Differential Diagnosis.—In presence of an otorrhœic or a subject affected with primary acute median otitis or one secondary to a foreign body in the ear, in which meningeal symptoms start unexpectedly, it is necessary to find out whether we have to deal with a serous leptomeningitis or with an œdema, either toxic or caused by retention, and to be sure of the otogenic nature or otherwise of the meningeal lesion. From the clinico-therapeutic point of view it must be established before operation whether these signs are referable to the aural lesion. To attain this end, the presence or absence of fever and its forms, the age and the more or less neuropathic temperament of the subject, his arthritic constitution or the reverse, the clinical examination of the cardio-vascular system, the liver, the urine, and even of the intestine (in case of intestinal toxæmia or infection), the existence of general or local infections of other systems, their nature and their progress, will give us good means of admitting or rejecting the presence of otogenic disorders. If, thereby, it is supposed that the meningeal

or meningitic symptoms are caused by the aural lesion, one will interfere more quickly in the way which seems best appropriate to the nature of the trouble. If it is a question of a foreign body, one will proceed to its extraction; in case of an acute retained tympanic suppuration one will perform a paracentesis; if, on the contrary, a mastoiditis be suspected, simple or associated with a labyrinthitis or endo-cranial complications, one will open the mastoid, the labyrinth, or the cranium so as to lay bare and check as much as possible all infective foci. In a case where the meningeal disturbances may thus be checked, there is reason for believing that they are of aural origin. Always, from the pathological point of view, a doubt exists as to the true nature of the meningeal process, and it should be necessary to discover whether it is a matter of a true serous lepto-meningitis, or of a retention œdema, or of one of toxic origin, or finally one of meningeal congestion of reflex nature, with or without dropsy. The elevation of the temperature will suggest rather a lepto-meningitis (at least when it is not a question of syphilitic or tuberculous meningitis) than a simple œdema. In the presence of endocranial (serious alterations of the dura mater, encephalic abscess, etc.) or labyrinth lesions, one will conclude rather in favour of a lepto-meningitis, especially if the cardio-vascular system and the kidneys are intact; on the other hand, in the case of a foreign body or of a simple retained acute median otitis, one will lean towards reflex meningeal congestion.

The most important information, nevertheless, will be supplied to us by the microscopical examination of the cerebro-spinal fluid. It will be necessary, therefore, in every case in which the existence of an otitic serous lepto-meningitis is suspected, to practise lumbar puncture, with the double purpose of diagnosis and cure. Let it be thoroughly understood that in this case one must not be content to note (as in the rare occasions in which lumbar puncture has been done) if the fluid gushes out under a more or less high pressure, if it is perfectly limpid, cloudy or opalescent, and finally if it contains bacteria; but the microscopical and cytological examination always must be practised, which, to my mind, constitutes the principal element of diagnosis. In the same manner as in a case of suppurative lepto-meningitis, the pressure of the fluid may not, as a matter of fact, be increased, without mentioning that this criterion often depends on the appreciation of the observer; further, even if it is a question of serous lepto-meningitis, the fluid may be pure of microbes; in fact we know that in certain cases of suppurative

lepto-meningitis bacteria have not been discovered in the cloudy fluid obtained by puncture.

On the contrary, in the serous lepto-meningitis, which constitutes a phlogistic process of moderate intensity, we note in the fluid, if not always at least frequently, a leucocyte increase and the presence of polymuclear cells characterising the common serous lepto-meningitis. If a leucocytosis formed almost exclusively of mononuclear cells is discovered, one thinks of a tuberculous meningitis. If the typical elements are not found increased that does not exclude absolutely the suggestion of a serous meningitis, but I believe that the leucocyte increase should be fairly frequent in the course of this disease. Apart from lumbar puncture, the cerebral meninges and the lateral ventricle can also be punctured, and it may be pointed out that recourse may be had to the cyto-diagnosis of this fluid. If the patient dies, the autopsy of the various organs and of the cranial contents, including the cerebro-spinal fluid, in exceptional cases, where the degeneration into suppurative lepto-meningitis is not produced, or only partially, will give still more convincing methods of diagnosis.

It is, therefore, only by again employing well-studied clinical material, and submitting it to a judicious criticism, that the most satisfactory knowledge of otitic serous lepto-meningitis can be acquired, because the material which we possess up to now should, I consider, be almost entirely put aside.

Conclusions.—For me, otitic serous lepto-meningitis exists, but is rare, and it is difficult to reveal it at the serous stage, which is always very transitory. It must not be confounded with the meningeal symptoms referable to a meningo-ventricular œdema caused by retention or by toxins, or with a reflex congestion of the meninges. Further, in the presence of a true serous lepto-meningitis, if, beyond the aurial infection, other general or local infections are observed, it is necessary to find out if the lepto-meningitis has been brought about by the ear infection or by other causes. To establish the differential diagnosis between true serous lepto-meningitis and non-inflammatory meningo-ventricular dropsy, beyond the evolution of the concurrent disease of other organs and the results of operation or autopsy, it is expedient to have recourse to the cytological examination of the cerebro-spinal fluid.

Serous lepto-meningitis is not determined only by the passage of bacterial toxins into the subarachnoid space or into the ventricles, as a number of authors, amongst them Merkens,

believe. On the contrary, I incline to the opinion that it is caused more frequently by the invasion of less virulent germs and in limited quantity. We know, in fact, that sometimes in patients with symptoms of otitic meningitis, leucocytes and microbes are found in the limpid fluid issuing from a lumbar puncture, and that this fact, which denotes a serous lepto-meningitis of variable intensity, has continued several days before the appearance of a suppurative lepto-meningitis, of which the pyogenic serous form evidently constitutes the premonitory stage.

THE AFTER-TREATMENT OF NOSE, THROAT AND EAR OPERATIONS.¹

BY PERRY G. GOLDSMITH, M.D.,

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My paper deals with some post-operative measures which I have found in my own practice to conduce to a more satisfactory result from a surgical standpoint, and a more comfortable convalescence on the patient's part.

Nasal Operations: Vestibule Operations.—I find that the vestibule can be so thoroughly cleansed that operations involving the resection of portions of the cartilage can be performed, the flaps sewn up, and the operated area sealed with flexible collodion and acetanellid. This should be left alone until it becomes quite loose, when it is easily detached, and if the stitches have not given way they may now be removed. A simple ointment of zinc oxide or hydrarg. ammon. will then be all that is required. Whatever method is adopted to deal with deviation of the nasal septum, it is required that the after-treatment should be one which necessitates as little interference as possible. I suppose most of you in your sub-mucous cases pack in some form for twelve to twenty-four hours. I have tried to avoid packing, but the occurrence of hæmorrhages, hæmatoma, etc., have induced me to abandon the method. What is required is simply sufficient pressure to prevent hæmorrhage and to coapt the two layers of muco-perichondrium. I find Bernays' splints wrapped in oil silk or Cargile membrane of value. I do not put the splint in without a covering, nor do I allow the discharge from the

¹Read at the Eastern Section of the American Laryngological, Rhinological, and Otological Meeting, Boston, Mass., 1911

nose to produce the swelling of the splint. The splint, having been placed in position, covered with oil silk, is then caused to swell out by dropping, from an eye-dropper, some hydrarg. bichlor. 1:5000, or other disinfecting solution. I know then at once how much pressure I have. Too great pressure is not only very painful to the patient, but may lead to sloughing of the flap. Sometimes one of the flaps is exceedingly thin, and composed of simply scar-tissue, and I do not care to expose this membrane to the results which might ensue from interferences with the circulation, whole or in part. Rather than over-pack these cases, I would only pack one nostril, and allow the thin membrane side to be left alone. I remove one splint, as a rule, in six or eight hours, and the other the following morning. A great quantity of mucous secretion is now usually found in the nose. I take care to leave this alone, as I am sure the nose does better by leaving the mucous membrane to itself rather than by packing or spraying. I prefer to inject into each nostril a large mass of bismuth-paste, as introduced by Dr. Jos. Beck, of Chicago. This paste keeps the nose clean, prevents crustings, and is sufficient support to the blood-vessels of the septal mucous membrane to prevent excessive œdema. The patient may be given a small glass syringe, full of the bismuth ointment, and use it himself daily. I have satisfied myself beyond question that this paste is the best nasal dressing I have used. Sometimes, say after ten days or two weeks, one finds the septal mucous membrane considerably puffy, the circulation is not good, a tendency to stasis and œdema is present. Here gentle massage with a cotton-tipped probe moistened in oil is of special value. In fact, I think we might very well do a great deal more intra-nasal massage. The question of hæmorrhage may be dismissed with saying it is unfortunate, and requires tight packing. Be careful to put the pressure on the bleeding spot. Leave it as short a time as possible, as your flaps may suffer. Should one have a large hæmatoma in a case not packed, I would re-open my septal incision and wash out the clots. I have done this on several occasions, and found no ill-results.

After-treatment when a Tear has taken place: After-treatment when a Perforation is bound to ensue.—When a tear has taken place, and is not associated with any loss of flap on the opposite side, simply replacing the edges and suturing is all that is necessary, but care must be taken in inserting the splints, otherwise one may curl the membrane up, and not only tear it more, but prevent it from being replaced. The slight crustings which form over this

torn area should be left alone for several days, for as a rule it is simply blood and mucus, and not especially septic. When it has been in place for several days, it may be softened and taken away, using no force whatever. If bismuth paste has been used there will be no occasion to bother about it, as it will be kept aseptic and soft, and come away itself. The presence of a perforation ultimately may not be of much consequence in itself. If it produces no symptoms one may leave it alone. If the edges are irregular and ulcerated, a mild mercurial ointment may assist healing, or if its presence be of moment, I think the opening may be very readily closed by a method which, as far as I know, is original. I refer to filling the hole with a thin piece of cartilage, and allowing the new mucous membrane to grow over the edges of the perforation and cover the cartilage. It may be performed at the time of the septal operation when a perforation is sure, as I have done with success, or if an old perforation is to be closed, a piece of cartilage may be used from another septal operation, or a sheep's cartilage may be used. Prof. McKenzie says the latter will keep two weeks. Occasionally one finds a thick membranous exudation a few days after a septum resection. This is easily peeled off, and is best left alone, as it seems to me to be a very good dressing protective.

Operations on the Inferior Turbinal.—Galvano-cantery punctures probably require no after-treatment unless the inflammatory reaction is unduly severe. Nevertheless I frequently apply along the seared line a mixture of carbolic acid and tincture of iodine. Care has also to be taken to allow the scab to remain and come away itself, for forcibly tearing it is to delay healing.

Removal of Anterior End of the Inferior Turbinal.—The point here is the question of packing. I do not hesitate to pack with Bernays' sponges, bismuth, or peroxide ganze after an inferior turbinotomy; delayed and secondary hemorrhages have been too frequent and annoying otherwise. The plug may be left in from twelve to twenty-four hours, and if hemorrhage then occurs it had better be replaced for at least forty-eight hours. Avoidance of all exertion and straining is necessary. Sometimes one does not have to pack at all and no bleeding occurs.

Removal of Posterior End of Inferior Turbinal.—I prefer in adults to do this operation with the assurance that my patient will go to bed for twenty-four hours. Hemorrhage may be very severe and necessitate a post-nasal plug. This risks the middle ear, and should be avoided if possible. It cannot be left as long as an anterior packing.

Operations on the Middle Turbinated Body.—Packing here should be avoided, as it is the cause of many cases of sepsis and accessory sinus involvement. Of course one may be forced to pack, but the early removal of the ganze is essential. Here it is that bismuth paste has served me so well. I have always had a dread of middle turbinal operations in my office or with the patient out of handy reach. Secondary hemorrhage has frequently been my lot. Now after extensive removal of tissue and thorough opening up of the ethmoidal labyrinth, I inject the entire upper part of the nose with bismuth paste, supporting it if necessary with a small piece of cotton-wool. I have yet to find it necessary to plug in these cases, and have not had so far even any serious annoyance from oozing. My wounds do better, are cleaner, and less inflammatory reaction follows. I am careful to avoid probing and swabbing, or even spraying for ten days to two weeks after ethmoidal operations. Leave these cases alone and they do better.

Naso-Pharynx.—I will speak only of adenoids. Most authorities are agreed that after a thoroughly performed adenoid operation there is no after-treatment necessary. Many cases could not do better with treatment than they do without any. Still, when one considers that he has an extensive surface exposed to all kinds of dust and germs in the inspired air, I think some little protection is not out of place. I feel sure my cases do better when I use an ointment sniffed up the nose, consisting of aristol gr. xxx, bismuth subnit. gr. xxx, zinc oxide gr. xxx, and vaseline one ounce. One can examine the naso-pharynx a few hours after use and find the entire posterior wall smeared with little white spots of zinc oxide. The scabbing is greatly lessened, the inflammatory reaction is reduced, and the patient's comfort is increased. Not infrequently, I might say frequently, one will find in the naso-pharynx a day or two after the operation one or more tags. I think it is very difficult to avoid these with curettes that cut down. I now use the La Force adenotome and have no tags to bother me. This instrument cuts from below upward, and when properly placed cannot leave shreds.

Tonsils, Fauces.—I will speak only of enucleation of the gland. Secondary hemorrhage is rare, but delayed hemorrhage is comparatively common. Pressure with various devices will usually succeed. The great point is to see the bleeding spot and catch it up. Sewing the pillars together is rarely if ever necessary. I cannot see how it is ever effectual. Ligation of the external carotid has been done many times for hemorrhage. It is rarely

necessary. One can press the common trunk against the transverse cervical vertebra and control the bleeding. Sometimes after a tonsillectomy one is called and finds the entire tonsil cavity filled with clot, along the margin of which blood oozes. Simply scooping the clot out as a rule stops all bleeding. On the other hand, the clot may form with no bleeding, and be the outer wall (really the inner) of a small cavity bounded above by the supra-tonsillar fossa, externally by the superior constriction of the pharynx, and inside by the mass of fibrin stretching between the anterior and posterior pillars. From this mass there can arise very marked infection with rapid involvement of the cervical glands, temperature up to 101° F., pulse rapid, chills, and general malaise. All these symptoms rapidly go away on opening the clot enveloped. It acts exactly like a piece of retained placenta. Therefore I insist on seeing my tonsil cases the next day and soon after, so that I may be aware of the progress of healing. Gentle massage of the tonsil cavity conduces to healing and less cicatrization. I give the patient a curved applicator and some argyrol solution 30 per cent. for home use. I am not satisfied to operate and not see the patient for a couple of days. In young children I am fond of formamint or tabloids *nlmi fulvæ* and phenol to lessen the pharyngeal infection. Ice cream makes a very good diet for a couple of days. Attention to the secretions is essential to a satisfactory after-course. In adults I not infrequently order tabloids benzoic acid compound, which contains very little cocaine and codeina. These may be dissolved in the mouth and are grateful to the patient. A spray of 25 per cent. peroxide is also frequently ordered.

Ear.—Practically the only operative work that requires any after-treatment worth discussing are operations on the mastoid.

Acute Cases.—In these cases I believe an attempt should be made in every instance to secure primary union by blood-clot method, excluding cases when the sinus is involved, or dura largely exposed. After allowing the mastoid cavity to fill up with blood, I place a very narrow rubber band into the antrum and bring it out at the lowest part of the wound. This drains the serum and is removed the next day. There are many small but important points to attend to in this method of operating, and if a complete operation has been performed, and perfect technique, there will be only an occasional case requiring any after-attention. This is, in my opinion, the ideal method of handling acute mastoid suppuration, and is a method which is very rapidly being adopted by many who have not heralded the fact abroad. Should the wound partly break

down or one or two stitches give way, with the appearance of some purulent exudation, do not assume too hurriedly that everything has gone wrong. The removal of one or two stitches may be all that is necessary, and the wound close under a dry pad. If the clot should become septic, all one has to do is to open the lower part of the wound and irrigate it out, then packing the cavity lightly with gauze. In cases subject to post-aural packing, I am in favour of very light packing and no syringing. Syringing is not necessary if a complete operation has been performed. Beck frequently fills the cavity with bismuth paste, and has occasion to do no further after-treatment than remove the stitches. One must see that the suppuration in the tympanum is controlled, and due drainage takes place, otherwise re-infection of the clot occurs unless the aditus is closed off, which I do with a plug of iodoform powder and acid carbolic 1 : 20.

Chronic Mastoiditis; Radical Operation.—I know of no operation the after-treatment of which I look upon with as much dread as I do these cases of the radical mastoid operation. It has always seemed to me that prolonged and tight packing is quite unnecessary. One often performs a radical operation and finds hard bone in the mastoid, and a very small antrum containing a comparatively small amount of granulation-tissue. Why should it be necessary that the entire mastoid cavity be packed with gauze through the meatus for weeks to have an epidermal lining grow out from the meatal flap? I am more and more inclined to leave the mastoid and antrum part of my radical alone and confine my attention to the tympanum. Excessive granulation may be controlled by silver, or if in the tympanum, by alcohol and pressure. I am not satisfied that good hearing depends solely on one's ability to pack the tympanum very tightly. A mass of tissue may form about the stapes it is true, but I am not convinced that this is permanent, or of real danger. There are undoubtedly some cases that demand prolonged and tight packing, but not by any means all. I was struck by the simplicity of the post-operative treatment of the radical operation on a recent visit to Boston. It is simplicity itself, and unless the results were good they would long ago be discarded. One must, of course, put something in to keep one's flaps in place for a few days, and I know of nothing that appeals stronger to me than Mosher's inflated rubber-bag packing. The use of spirit drops is usually called for after all inflammatory reaction has stopped. Persistence of the discharge after a radical mastoid may be due to several causes. Constitutional defects such as chronic Bright's

disease have been not infrequent. Imperfect closure of the Eustachian tube is probably as common a cause as any other. Suppuration of the labyrinth is not as rare as we think. A localised suppuration here may keep up the middle-ear infection for a long period. Adenoids and their remains are a far more common association with chronic middle-ear suppuration than we have hitherto been disposed to consider.

ACCIDENTAL EXPOSURE OF THE MENINGES DURING INTRA-NASAL OPERATIONS.

BY JAMES B. HORGAN, M.B., CH.B.,
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THE following two cases, which occurred in my private practice, may be of interest as showing that exposure of the meninges, whether accidental or otherwise, by the intra-nasal route may, under certain circumstances, and when carried out with due regard to main surgical principles, be not fraught with any graver risk of setting up some intra-cranial mischief than the same procedure involves when carried out, as it so frequently has to be, in aural surgery.

CASE I.—A girl, aged seventeen, consulted me on June 24 of this year for obstruction of the left nostril of two years' duration, accompanied by increased anterior nasal discharge on this side and frequent colds in the head. She stated that polypi had been removed from this side of the nose on three occasions. Upon examination I found that there were multiple small polypi in the left middle meatus. Transillumination showed total infra-orbital dulness of the left side of the face, and proof puncture of the left antrum gave well-marked evidence of antral disease.

On June 27 I opened the left antrum under local anaesthesia by the modified method of Mikulicz after removal of the anterior third of the inferior turbinal. I also removed the polypi, the anterior end of the middle turbinal, and opened up the ethmoidal cells with Luc's and Grunwald's forceps. This region appeared by touch to be extensively necrotic.

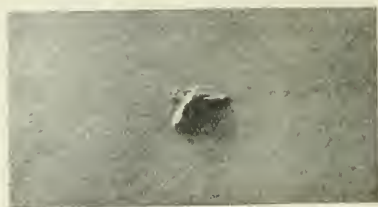
On July 15 I again attacked the ethmoidal region and removed more polypi and necrotic tissue. In September the patient's condition was markedly improved, and she informed me that she no longer succeeded in washing anything out of her antrum with the

syringe and cannula. Upon inspection the antrum appeared to be nearly dry, but I could still confirm muco-pus high up in the anterior ethmoidal region. On September 7 I therefore attempted to still further open up this part, but had not proceeded very far when the patient suddenly complained of severe pain in the frontal region. Upon cleansing the field of operation I was distinctly able to see a portion of the dura pulsating through a small oblong opening about 4 mm. in extent. The piece of bone had been removed with a Grünwald's forceps, and the force used in removing it had been somewhat in excess of that permissible when working in this region. As soon as I perceived the nature of the injury I enlarged the perforation on all sides by means of Hajek's hook and biting sphenoidal forceps until it had attained roughly the dimensions of a threepenny-piece. This procedure, which I carried out with some difficulty, caused the patient violent frontal pain, which persisted for some hours after the operation, when it was relieved by aspirin. No form of nasal plug was used after the operation. The patient passed a restless night, with some pain, but felt better the following morning. I kept her in bed for some days with her head raised, and she made an uninterrupted recovery, the temperature being never appreciably above the normal and no signs of intra-cranial inflammation appearing. When last seen by me the pulsation of the dura could still be plainly seen by anterior rhinoscopy.

CASE 2.—A lady, aged twenty-six, consulted me on February 14 last for intractable frontal headaches of some years' duration. She was sent to me by her physician to have her nose examined, as the prescribing of glasses and all other means tried had failed to relieve the headaches. Upon examination I found that there was a deflection of the septum to the right, hypertrophy of the posterior ends of both inferior turbinals, and bulvous enlargement of the anterior ends of both middle turbinals, which lay in close apposition with the septum.

On February 19, working with cocaine anaesthesia, I snared off both posterior ends, removed the anterior ends of both middle turbinals with scissors and snare, and did a submucous resection of the septum. In doing the latter my endeavours were chiefly directed to the upper part of the perpendicular plate of the ethmoid, which was of abnormal thickness. Working with the Jansen-Middleton forceps I was surprised to find that an extra large piece of bone, on removal, showed two lateral expansions, so that the whole piece of bone presented roughly a T-shaped appear-

ance (see figure). On inserting the Killian's speculum I found that I had removed the uppermost part of the perpendicular plate with an irregular piece of the cribriform plate on each side, and that the extra-dural space was exposed in a sagittal direction for a distance of half an inch. The piece of the cribriform plate removed was roughly triangular with its apex directed forward. In this case pulsation was not visible and the patient did not complain of any excessive pain, even when the exposed dura was palpated with a probe. I incised one of the muco-periosteal flaps vertically high up near the extra-dural space and did not stitch the primary incision. The patient made an uneventful recovery and returned home on February 27 quite cured of her headaches, which I learn from a recent letter have not since returned. The accident in this case was due to my incorrectly using the forceps to break off the bone by a twisting action instead of cutting it clean, in which



latter way I am now of opinion it should always be removed when working high up or in close proximity to a partially reflected muco-periosteal flap.

It is interesting to note that in the second case I was dealing with an aseptic wound, and that as far as intra-nasal surgery permits us to operate aseptically, I could consider the field of operation aseptic; I nevertheless thought it advisable to incise one of the muco-periosteal flaps high up near the exposed dura in case drainage should become necessary. In the first case, however, the dura was exposed to, and undoubtedly contaminated by, what was probably a mixed infection. This fact, coupled with the fear that a small piece of septic material might have been lodged between the dura and the underlying bone, prompted me to enlarge the bony perforation, and I have no doubt that this was mainly instrumental in preventing serious consequences. The violent pain experienced by this patient at, and immediately subsequent to, operation, may, I think, be attributed to direct instrumental pressure on the meninges.

SOCIETIES' PROCEEDINGS.

BRITISH MEDICAL ASSOCIATION.

Meeting at Liverpool, 1912.

SECTION OF LARYNGOLOGY AND RHINOLOGY.

JOHN MIDDLEMASS HUNT, M.B., *President.**Abstract Report by MR. HAROLD KISCH.*

After some initial observations, Dr. Hunt said: In Liverpool we have now throat departments in connection with three of our general hospitals, a lectureship in laryngology in our university, and there are seven men engaged exclusively in the practice of oto-laryngology. But much remains to be done before our speciality obtains that recognition which it has long enjoyed elsewhere. To illustrate what I mean I need only say that in this great centre of population, numbering considerably over a million, there are no beds specially set apart for the treatment of diseases of the throat and nose, except four in the Stanley Hospital, which are also used for ear cases. Personally I look forward to great changes in this respect as a result of the new Insurance Act.

Discussion on the Differential Diagnosis of Œsophageal Stenosis.

ABSTRACT OF OPENING PAPERS.

Prof. Otto Kahler firstly briefly discussed the methods of investigation formerly in vogue. He sounded a note of warning against the use of the probe. Auscultation was sometimes of use in the diagnosis. The Röntgen rays were a great help, and could be used in two ways—Röntgen illumination and radiography. The administration of bismuth salts was discussed and zirconium oxide (contrastin) recommended owing to its non-toxicity. The most suitable means of indicating stenosis was the administration of the drug in glutoid capsules of various sizes—6, 8 or 10 mm. in diameter. Œsophagoscopy was, however, the most valuable method. He always used a Brünings' tube, the best length for the small tube being 25 cm., without a mandrin. For stenosis of the superior part of the Œsophagus he preferred the patient to sit, for those in the inferior regions he favoured the lie-down position either on the back or left side. Local anæsthesia usually sufficed. The removal for examination was of the greatest use in diagnosis. Infection of the wound could be prevented by the immediate application of hydrogen peroxide or tincture of iodine, and the subsequent administration of formamint. He then mentioned the normal constrictions seen in the Œsophagus during Œsophagoscopy. With regard to foreign bodies, he mentioned three cases in which calcification in the thyroid had led to a wrong interpretation of skiagrams. The intense pain felt when the spot under which the foreign body lies was touched might be turned to

account in differentiating between a foreign body, around which the parts are much swollen, and malignant disease. Foreign bodies often cause slight scratches, especially at the mouth of the œsophagus, leading to spasm and subjective stenosis. Periesophageal abscesses, secondary to foreign bodies, might cause almost complete obstruction. Other causes of stenosis were the swallowing of caustic fluids, peptic, syphilitic and tuberculous ulcers, and after scarlet fever and diphtheria. Three forms of œsophageal tuberculosis were described by Guisez: (1) The secondary œsophageal tuberculosis arising from perforation by tuberculous glands; (2) the ulcerous form; (3) the tumour form, which could only be diagnosed by the removal and examination of a fragment. Stricture due to actinomycosis had been described, and the review concluded with a consideration of compression stenosis.

Malignant Disease and Pouches in the Œsophagus.—**Mr. E. B. Waggett** said: Much as we all dislike the subject, we have to remember that at least three out of four gullet cases are malignant. A case of dysphagia with regurgitation of alkaline food, emaciation, pain, recurrent and sympathetic nerve paralysis, will probably turn out to be one of malignant disease, but we cannot for a moment make a definite diagnosis on these symptoms. The one certain diagnostic sign, namely, the spontaneous ejection of a piece of growth, the nature of which can be proved by microscopic examination, is an occurrence of which I have knowledge neither at first nor second hand, though I have seen it quoted in general terms in some of the books. I need not say here that the admixture of blood with regurgitated food is by no means diagnostic of cancer, for the blood may come from dilated veins or from fissures and ulcers which are non-malignant. I am surprised to find that the general text-books still affirm that the sovereign means of diagnosis lies in the passage of the bougie. It is true that in the hands of certain surgeons the blind passage of bougies, coupled with great manipulative skill, long experience and the clinical instinct, has given reliable results with but few errors and accidents; but this blind method of diagnostic palpation has now to compete with methods of recent development. I am anxious that we should at this meeting to-day once and for all throw cold water upon blind bougieing of the gullet, for the reason that it is both unsafe and quite inconclusive. We now have two diagnostic methods, both of which can be used with safety, and one of them with certainty—the X rays and the direct method. With the X rays we can with perfect safety diagnose stenosis of the gullet and locate the position of the stenosis, determining at the same time whether the cause is intrinsic or extrinsic—that is to say, due to stricture in the true sense or to compression by neighbouring structures. A good deal of information as to the mediastinal contents is forthcoming from a simple X-ray photograph, but with the addition of bismuth porridge and the right antero-lateral posture very precise information is to be obtained. With a powerful source of X rays and a small diaphragm in use we can observe the process of deglutition in the fluorescent screen with no difficulty. Direct œsophagoscopy enables us to make absolutely sure of our case and to make a genuine diagnosis. Examination with the œsophagoscope would be ideal if it could be made without danger and without discomfort. First, with regard to danger: I make bold to say that the inspection of a stricture, malignant or otherwise, can always be made without danger, or at least with no more danger than that entailed by the local or general anæsthetic employed. A certain

number of fatal accidents have occurred, but these are avoidable accidents. In all cases they have been due to one of two causes, namely, laceration of the diseased tissues by a guide or mandrin projecting in front of the œsophagoscopic tube, or else the attempt to pass the tube into and past the stricture. For purposes of diagnosis it is never necessary to do more than bring the end of the tube into proximity with the stricture, and in the majority of cases it is unnecessary to go nearer to the stricture than half an inch; from this distance one can with precision and safety wipe the diseased part with cotton-swabs and remove a fragment with the forceps. Secondly, with regard to the mandrin. The passage of the cricoid constriction is facilitated by its use, and it is conceivable that when the X ray has made it clear that the upper region of the œsophagus is sound, the use of the mandrin may be permissible. But no suspicious area ought to be approached except under the direct guidance of vision. The mandrin is not a necessity, and I cannot recall a single case of healthy cricoid constriction which could not be traversed without its assistance. Where the upper end of the gullet is diseased the use of the mandrin entails a grave risk. The mandrin should never be used except in those regions of the gullet which are definitely known to be healthy. The use of bougies passed under visual control is, of course, a totally different matter. Next, as to the comfort of the patient. The sense of fear and insecurity is much diminished by employing the recumbent position, either dorsal or right lateral, and by administering a dose of morphine and atropine. Œsophagoscopy is not a pleasant process, and a hurried examination made under cocaine is often useless where merely a negative result is forthcoming. If in any such case the diagnosis is worth making, it is worth while to give a general anæsthetic. With a light chloroform anæsthesia there is no danger and no after-discomfort. It is wise to keep the patient under observation for twenty-four hours. With regard to difficulty there are two classes: the easy class, where the disease is definitely in the middle and lower portions of the gullet, and the difficult class, where it is at or about the cricoid constriction. An essential point in the second class is to make out the condition of the cricoid constriction as the instrument traverses it. This can be done if two hands are taken to the work—the left hand to supply the forcible traction upon the cricoid and the right hand to advance the spatula. During its gradual progress the spatula should be rotated on its longitudinal axis, so that all parts are brought into view. The manœuvre recommended by some surgeons whereby the tip of the instrument is felt suddenly to pop through the cricoid constriction is objectionable. I hope that you will urge the necessity of this gradual sliding of the instrument through the cricoid constriction under visual control. One question remains: Is œsophagoscopy always possible? The cases in which it is impossible must be very limited. Personally I have seen but two cases, one of ankylosis of the cervical and dorsal vertebræ in an old man, another of partial ankylosis of the jaw coupled with a good set of teeth. Killian's suspension laryngoscope promises a satisfactory method of obtaining a general view of the post-cricoid region.

Year by year the technique advances; we have excellent new tubes devised by Hill in this country and other experts abroad; we have, this year, Killian's suspension apparatus.

Turning to pouches, true œsophageal pouches are practically always traction-pouches, the result of cicatrization of diseased bronchial glands. Consequently they are generally found just below the level of the bifurcation of the trachea and on the anterior aspect of the gullet. As a rule,

they have a wide opening and a pointed fundus, and as the latter is nearly always on a higher level than the former, food does not tend to collect in and to distend the cavity. Consequently these pouches do not give rise to symptoms, and are usually discovered accidentally. One may say that the diagnosis is made by the œsophagoscope.

We must, however, consider the pharyngeal pulsion-pouch, for though it is in fact a herniation of the lower pharynx and not of the œsophagus, it comes into notice by obstructing the latter viscus. The diagnosis is fairly easy, and it is usually made by the patient, who, as his meal progresses, experiences increasing difficulty in deglutition, associated with the development of a swelling in the neck immediately below the level of the cricoid, and usually upon the left side. The patient learns that by manipulation he can partially empty the pouch and continue his meal.

These patients often complain of the rejection of unaltered food some hours after its ingestion; it comes up in small quantities at a time, unlike the gush of regurgitation or œsophageal vomiting observed in cases of true dilatation, such as occurs above an organic stricture. Unless the pouch is kept clean by syringing after meals, fermentation takes place, with the production of foam, which may cause great discomfort and incessant cough at night. I do not remember observing this particular symptom in any but pouch cases. In conjunction with the symptoms mentioned the X ray with bismuth porridge gives invaluable evidence, but we cannot always, by the mere inspection of the photograph, assert that the case is one of pouch.

An ingenious diagnostic method has been devised by Plummer. About six yards of silk are swallowed during the twelve hours preceding the examination. A bougie, with its perforated acorn-head threaded over this silk, is passed down to the obstruction in the gullet. The silk, its lower end more or less anchored in the intestines, is now pulled taut. If the bougie remains unmoved you may diagnose stricture, but if it is raised, say a couple of inches, you may conclude that you are dealing with a pouch, and that the distance between its fundus and the lower lip of its orifice is two inches. It should always be possible to diagnose a pouch by the direct method if the tube is passed under visual control and quite slowly. The difficulty is, of course, to see the horizontal slit-like orifice of the œsophagus, which lies immediately below the level of the cricoid and sometimes under cover of the lower edge of that cartilage. The spatula passes only too readily into the pouch, and it is easy to miss the œsophageal opening unless either the introduction or the withdrawal is made with great deliberation and with the additional aid of a probe. Mosher describes the detection of the œsophageal opening in an elusive case of this sort by the use of a pneumatic œsophagoscope, whereby he obtained a view of the inflated viscus and saw the two orifices as he withdrew his instrument.

Stenoses at the Lower End of the Œsophagus, with Special Reference to those of Spastic Origin.—Dr. A. Brown Kelly.—The symptoms of obstruction at the cardiac end of the gullet are: (1) Hindrance to the passage of solids and liquids into the stomach; all degrees may exist, from the slight or momentary difficulty with meat to complete obstruction to the passage of liquids. The patient may be able to force the contents of the gullet into the stomach by swallowing movements or by drinking large quantities of fluid. (2) Discomfort or pain in the epigastric region, which the patient attributes to food and drink lying in the gullet above the stomach. (3) Vomiting, or rather regurgi-

tation, which takes place readily, often without effort, immediately after a meal or while fasting. There is no nausea, and the food returned has its proper agreeable taste. Occasionally blood may be present. (4) Profuse secretion of saliva. Gottstein states that 150 c.cm. may be secreted in ten to fifteen minutes. (5) Loss of flesh, weakness, cachexia.

The pathological conditions at the lower end of the œsophagus which may give rise to stenosis are: Cancer of the œsophagus or cardiac portion of the stomach; mediastinal tumours and other extra-œsophageal diseases leading to compression of the œsophagus; cicatrices; idiopathic hypertrophy of the œsophageal musculature; and spastic affections.

Cancer.—Next to the cervical end, the cardiac region is the most frequent site of cancer in the œsophagus. The chief and often sole symptom is dysphagia, which usually sets in slowly. Spasm plays an important rôle in most œsophageal diseases, and particularly when these are situated in the region of the cardia; consequently long before the neoplasm has attained a size capable of causing obstruction complete dysphagia may be produced by spasm.

Malignant disease in the middle portions of the œsophagus in some cases progresses very slowly and has periods of improvement. Such alternations are not characteristic of cancer at the lower end, owing to constriction of the œsophagus and the comparatively unyielding nature of the surrounding tissues. The presence of blood in vomited or regurgitated fluid, in the œsophagus on inspection, and a marked tendency for the tumour to bleed, all point to malignant disease. The appearances produced by cancer in the lowest part of the gullet, as seen by direct examination, vary greatly.

The submucous type of cancer may closely resemble certain spastic affections of the cardia, and requires detailed consideration. It is in those cases in which we are most doubtful of the diagnosis, owing to the mucous membrane being smooth and intact, that we are precluded, as a rule, from excising a piece of the tumour for histological examination. Careful observation of the endoscopic appearances is, therefore, the more necessary. The neoplasm may be at an early stage and limited to a small area immediately above the cardia. The infiltrated part of the wall may then project into the lumen, giving it a crescentic shape; it moves during respiration less freely than the surrounding parts, and its surface is smooth, stretched, intact, and very red although occasionally pale. Very soon the surface ulcerates or becomes nodular, and the true nature of the bulging is evident, or may be determined by removal and examination of a fragment. The malignant process may be more advanced, and may involve the entire circumference, producing an annular constriction. If it develop uniformly, a funnel-shaped stenosis will result. This has to be distinguished from the funnel-like constriction due to corrosive action. In the latter case the funnel is deeper, its surface is more uniformly smooth, and scarring may be seen above. When caused by cancer the surface is often nodular and ulcerated, and the mobility of the parts during respiration is diminished or absent. In both cases the œsophagus may be somewhat dilated above the constriction.

The œsophagus may be normal as far as the hiatus œsophageus, and the disease causing the dysphagia may be located beneath the diaphragm. In our efforts to traverse the epicardia-cardia it is most important to carry out all manipulations with caution, and to employ no undue force in attempting to pass the œsophagoscope deeper. The danger is not so much of perforating with the point of the instrument as of tearing the

neighbouring diseased tissue in consequence of the parts being put on the stretch.

When the cancer is in the diaphragmatic canal the difficulties of inspecting the parts are great. In the normal subject the passage of a tube into the stomach is not always easy, so that when an apparent obstruction is encountered it is necessary to allow for the natural tonus of the cardia as well as to keep in view the possible presence of a neoplasm. Owing to the limited field of view in this situation one must content oneself with the detection of very slight changes, and, if need be, examine repeatedly with the patient in different positions in order to get a characteristic aspect. If the neoplasm is in the stomach it may cause obstruction by submucous infiltration and narrowing the cardiac orifice. One looks for a tumour-like prominence or fold and particularly for an ulcerated or readily bleeding surface. Tapia has pointed out in connection with one of his cases that the respiratory movement of the fluid lying at the cardia instead of being up and down as usual is from side to side. He considers that this appearance allows of an exact diagnosis being made of the site and extent of the tumour. In the case in question the neoplasm was seen in the lowest part of the oesophagus on the right wall. This, however, was merely part of a large growth which sprang from the small curvature of the stomach and extended across beneath the cardiac opening. Its upper surface served as a resting-place for fluids, hence the horizontal oscillations.

Compression Stenoses.—Stenosis in the region of the cardia in consequence of extra-oesophageal pressure is nearly always due to a mediastinal tumour. Guisez has seen stenosis and displacement of the cardia produced by aneurysm of the aorta in one patient and by cancer of the liver in another. A tumour of the great curvature may act similarly. The oesophagoscopic appearances may be indistinguishable from those produced by submucous cancer. There is the same encroachment on the lumen by a smooth bulging of the wall. The covering mucous membrane is usually intact and normal in appearance, but may be nodular or ulcerated. The affective part does not move during respiration. The symptoms of oesophageal stenosis develop insiduously, and before they are marked the mediastinal growth has attained considerable dimensions and is evident on X ray examination.

Guisez emphasises his observation that in stenosis by compression dysphagia is quite out of proportion to the degree of obstruction. This he attributes to spasm.

Cicatrices.—The history of having swallowed a corrosive is often considered sufficient to establish the diagnosis. This is not always to be relied upon. The stenosis may develop very slowly, and years may elapse between the date of the accident and the onset of the signs of obstruction. On the other hand, it is not uncommon for patients to attribute their dysphagia to an injury from hot liquid or food, or a foreign body, and on examination to be found suffering from malignant disease. Investigations into the mechanism of deglutition have shown that solid food is carried comparatively slowly down the gullet by peristalsis, while liquids are projected rapidly or squirted to near the cardiac end by the muscles of the mouth. The facts noted in the cases that I have examined—namely, that cicatrices due to corrosive liquids are found in the lower part of the oesophagus, while those due to solids are in the upper part—are in accordance with the physiological observations mentioned. Guisez has found cicatricial stenosis in the neighbourhood of the cardia, in five patients probably due to a round ulcer, and

in other five as a consequence of chronic œsophagitis. In the latter group of cases the primary condition was spasm of the cardia, which, by causing retention of food, set up inflammation, infiltration, and concentric cicatricial contraction. A sound localises the site of the stricture. X rays give additional information as to its permeability, but only the œsophagoscope allows of a positive diagnosis being made as to the situation, nature, form, and degree of the obstruction. In old cases one usually sees a funnel-shaped constriction or diaphragm-like partition, with a more or less small aperture in the middle or to one side, and a surrounding smooth, pale, cicatricial surface. Several strictures may be superposed. If the lumen is much reduced, the œsophagus may be dilated above, and may contain food *débris* and saliva.

Idiopathic Muscular Hypertrophy.—Only very few cases of primary muscular hypertrophy of the œsophagus are on record. Elliesen has carefully studied the condition, and his case may be taken as typical. The patient was a man, aged thirty-nine, who died of tuberculous meningitis. The œsophagus, excepting above, was converted into a rigid, thick, uniform tube. The most important change was an enormous thickening, especially of the inner circular muscular layer. The external longitudinal muscular layer participated but little in the thickening. No other change could be detected. Ehlers more recently has met with a similar hypertrophy of the œsophageal musculature, which he regards as probably congenital, associated with congenital hypertrophic stenosis of the pylorus. In this case there was an immense thickening of the muscular wall, which a short distance above the cardia amounted to 12 mm. No other pathological condition was found in the œsophagus; its lumen was normal. In neither of the above cases was there dysphagia, although Elliesen's patient had to masticate carefully and eat slowly from his fifteenth year. It is possible that the dysphagia might have increased had he lived longer, and that death might have taken place from inanition, as occurred in the earlier recorded cases. Both writers discuss the ætiology of the hypertrophy, but neither can assign a probable cause. I think that cardio-spasm would explain both cases. An increase in the lumen of the œsophagus does not invariably accompany spastic closure of the cardia, and it was just because of the absence of dilatation that both authors excluded cardio-spasm as a possible cause. I am therefore not prepared to regard this condition as a distinct entity.

Paralysis.—Paralysis of the gullet is rare, but the symptoms to which it gives rise may cause it to be confused with stenosis at the cardia. The patient may be unable to swallow solids, while liquids pass easily; he may have pain behind the sternum during eating, and he may vomit frequently quantities of mucus. Our fears as to the grave nature of the ailment are set aside by the result of the examination. On auscultation the first deglutition sound may be heard if there is insufficiency of the cardia. A bougie passes readily into the stomach. The œsophagoscope is introduced with unusual ease, the parts appearing to be almost insensitive; there is no sign of disease in the gullet, and the epicardiocardia is not unduly contracted.

Spastic Affections.—We here enter upon a subject that is highly controversial from the standpoint of the anatomist, physiologist, pathologist, and clinician.

Spasms play a very important part in affections of the œsophagus—for the moment I am speaking of the œsophagus as a whole and not of the cardiac end only. It may be either primary or secondary. We are all acquainted with secondary spasm, to which many strange and

sometimes misleading clinical phenomena in the œsophagus owe their origin.

I may mention several examples. In œsophageal cancer not uncommonly the first symptom is sudden and complete inability to swallow, which, after a variable duration, passes off entirely. A patient with cancer at the lower end of the œsophagus may locate the dysphagia at the upper end owing to spasm. In another patient symptoms may point to obstruction at the cardia, and this may be confirmed by a bougie, whereas the neoplasm is beneath the mucous membrane in the middle portion of the œsophagus, and is still too small to interfere with sounding. The power of deglutition in patients with cicatricial stenosis may vary much from day to day, as may also the ease with which a bougie is passed, owing to spasm.

I now pass to the consideration of an affection which, in most instances, owes its origin to primary spasm—I refer to cardio-spasm.

Œsophageal Aspect of Cardio-spasm.—The normal aspect of the hiatus œsophageus varies in different persons, and even from time to time in the same person. It often appears as a cleft running obliquely forward and to the left, with a rounded fold in front and to the right, and another behind and to the left; it may also have a stellate appearance. Occasionally it opens a little, especially if a deep inspiration be taken, and scanty mucous secretion wells up. In cardio-spasm the appearance of the hiatus œsophageus may be the same as in the normal state. On the other hand, certain characteristic features may be produced by the contraction. The folds bounding the obliquely running cleft, or those radiating from the point-like lumen, may bulge unduly and produce an appearance like the os. The mucous membrane over the most prominent parts may be pale and traversed by blood-vessels, or, if irritated by retained food, may be inflamed. During the spasm there is no variation in the lumen with respiration, and no bubbling up through it of fluid or gas. Starck states that he has seen the hiatus free while spasm at the cardia produced a funnel-shaped constriction.

Having noted the points mentioned, the tube is now gently pressed onward. The parts may be found excessively sensitive, and an unusual amount of resistance may be experienced; but on waiting a little relaxation takes place, and the instrument glides along the abdominal section of the gullet and enters the stomach. Leriche states that in no case of cardiospasm is the epicardia-cardia impermeable. Starck distinguishes spasm in the diaphragmatic portion of the œsophagus from spasm at the cardia, and states that in the former he has found the closure so tight as to be insurmountable, while at the latter he has never met with muscular resistance. Spasm at the cardia may produce a stellate arrangement of folds, some of which may consist of gastric mucosa.

In carrying out these manipulations the œsophagoscope should be passed from the right angle of the mouth, and the patient's head bent to this side. The tube should be carefully kept in the axis of the gullet. Resistance at the cardia should, if possible, be overcome by cocaine, gentle pressure, and patience. It may be necessary to repeatedly alter the position of the patient before entrance to the stomach is effected. Lying on the side relaxes the crura of the diaphragm (Gottstein), and probably the right recumbent position, as recommended by Starck, is best of all.

Diagnosis of Cardio-spasm without Dilatation.—It will be gathered from what has already been said regarding compression stenoses and stenoses due to cancer at the cardia or in the diaphragmatic part of the gullet

that the differential diagnosis of these conditions from cardio-spasm is sometimes extremely difficult; at present I am referring to cardio-spasm without dilatation.

Compression stenosis above the diaphragm can usually be recognised by the asymmetry produced; pressure below the diaphragm may alter the direction of this part of the gullet. When the abdominal œsophagus is involved, either by infiltration of its wall or by external pressure, inspection may fail to differentiate the condition from cardio-spasm. If difficulty is experienced in entering the stomach, in spite of the adoption of the manipulative measures recommended, it is best to suspect the presence of malignant disease. Repeated examinations should then be made at intervals, with the object of detecting the development of irregularities of ulceration in the neighbourhood of the cardia. Any attempt to pass the œsophagoscope into the stomach should be made with great gentleness. It is necessary not only to keep the instrument completely under the control of the eye and hand, but to bear in mind that extremely vulnerable diseased tissue may be in the immediate vicinity. If the state of the patient do not allow of delay, let gastrostomy be performed, and settle the diagnosis later.

Dilatations of the Œsophagus.—Stenoses at the cardia are liable to be followed by dilatation of the part of the œsophagus immediately above. When the stenosis is due to cicatricial contraction, extra-œsophageal compression, or malignant infiltration of the wall, the dilatation, if present at all, is, as a rule, insignificant. In cardio-spasm it may also be *nil*, but on the other hand it may be immense. A marked dilatation, with symptoms of obstruction at the lower end of the œsophagus, is therefore strongly suggestive of cardio-spasm. The cases in which a differential diagnosis is so difficult and to which reference has just been made are those of cardio-spasm without dilatation.

Angulation and Kinking of the Œsophagus.—The œsophagus not infrequently undergoes marked deviation, sometimes with elongation; the elongation may be associated with, or independent of, dilatation. The normal length of the œsophagus is about 25 cm.; in a case of Luschka's it measured 46 cm. When the elongation is such as to cause the gullet to approach the hiatus diaphragmaticus obliquely, kinking may be produced and symptoms of dysphagia may arise. It is probably only under such conditions that the crura of the diaphragm play a part in causing obstruction. In the later stages of cardio-spasm with dilatation the dysphagia therefore is chiefly mechanical. The recumbent position is then specially unfavourable for deglutition, as the food gravitates to the deepest part of the sac and cannot get into the stomach.

Kovács and Stoerk have recently studied the condition of the œsophagus in enlargement of the heart. They show that as a result of enlargement, especially of the left auricle, the œsophagus may be markedly compressed and deviated. The bend, which may approach a right angle, passes to the right and backwards, and the lowest part of the gullet, in order to reach the opening in the diaphragm, must cross the aorta almost horizontally. They also prove by X rays that ingesta may be delayed above the bend. Starck has found the mucous membrane in this situation very inflamed, a condition which he assumed to be due to the temporary retention of food.

Bending of the œsophagus is recognised during direct examination by the difficulty or impossibility of keeping the lumen of the gullet opposite the end of the œsophagoscope even when the tube and patient's head are bent unduly to the right or forward.

Symptoms.—Occasionally a dilatation of the œsophagus is found at a necropsy without there having been any symptoms to suggest its presence during life. As a rule, however, symptoms are manifested. These may set in suddenly and be very marked, some form of dysphagia being the most prominent; or they may develop insidiously, so that years may elapse before the affection causes trouble. A characteristic symptom of dilatation is regurgitation. This is unaccompanied by nausea or retching, and may be brought about merely by increase of intra-thoracic pressure without active contraction of the gullet. The regurgitated fluid consists of undigested food and mucus, is usually alkaline, but if long retained may be slightly acid; it contains lactic acid, but no hydrochloric acid or pepsin.

It is not surprising that patients complaining of vomiting and epigastric pain, amongst other symptoms, are regarded as suffering from disease of the stomach. A fair number of cases are recorded in which gastro-enterostomy was performed for persistent vomiting, and at the *post-mortem* examination the disease was found in the œsophagus and not in the stomach. In cases of violent, cramp-like pains in the epigastrium, Gottstein emphasises the importance of keeping in view not only affections of the stomach and gall-stones, but also spasm of the cardia. In all of his cases of cardio-spasm the disease had been treated for years as ulceration of the stomach or gall-stones.

Rumination.—In connection with regurgitation reference should be made to merycism or rumination. Some of the published reports of cases of rumination strongly suggest that the patients had stenosis at the cardia with regurgitation. The correctness of the diagnosis in these cases becomes more doubtful when no mention of the latter condition is found, and when at the *post-mortem* examination of some ruminators dilatation of the lower part of the œsophagus is stated to have been present.

Well-marked cases of regurgitation and rumination are easily distinguished, but in some individuals the symptoms may not be characteristic, and the distinction may be difficult. In rumination heredity often plays a part. The process may set in at any age, even in childhood. It begins from a few minutes to half an hour after meals; mouthful after mouthful of the food is returned, chewed, and swallowed; and this may go on for an hour or until next meal. The food is pleasant, but may become sour if the rumination continue longer than two hours; it contains hydrochloric acid and pepsin.

Diagnosis.—Various tests have been devised to prove that the œsophagus is dilated, and that it can retain a large quantity of fluid without allowing any to escape into the stomach. Thus a stomach-tube is passed and 200 c.cm. of methylene-blue solution poured into the stomach. The tube is then removed, and the patient drinks 200 c.cm. of milk. Again the tube is introduced a distance of 30 cm. and unchanged milk is obtained, and on being passed to 50 cm. blue-coloured fluid returns. The capacity of the dilated œsophagus can be conveniently measured by Lerche's œsophagometer. X rays give valuable information.

Endoscopy surpasses all other methods in the extent and accuracy of the information it affords regarding œsophageal dilatations. When the œsophagoscope is in the lower third of the gullet, instead of being able to overlook the entire or greater part of the circumference, we find, if the patient is seated, that more or less of the wall passes out of sight and that we are looking into a large cavity. During expiration the dilatation will be at its smallest and the walls best seen. If the patient is recumbent during the examination, a fold of the overlying wall may dip down and

cover the end of the tube and present no respiratory movements. It will also be found that in order to bring into view opposite points in the circumference of the gullet the tube must make a considerable excursus. The lining membrane of the dilatation is crossed by transverse folds and is inflamed or superficially ulcerated; usually it contains fluid, food, *débris* and mucus. The inspection must, lastly, discover any malignant tumour that may be present. The association of diffuse dilatation and cancer has been noted by several observers.

Ætiology of Œsophageal Dilatations.—The first important contribution towards the elucidation of dilatation of the Œsophagus was made by Zeuker in 1878. This writer published reports of a series of cases in which the patients died with symptoms of severe dysphagia, and at the necropsies Œsophageal dilatation was found, but no stenosis; he thought the condition was due to diminished power of muscular contraction. In 1881 Strümpell, in discussing a similar case, raised for the first time the question of spasmodic closure at the cardia as a cause; he dismissed this, however, in favour of the view that there was kinking at the hiatus Œsophageus and secondary dilatation in consequence. V. Mikulicz in 1882 made the first Œsophagoscopy examination of the affection; he attributed it to spasm at the cardia, and therefore termed it "cardio-spasm." In almost all cases of so-called idiopathic dilatation of the Œsophagus there is spastic closure at the cardia, as indicated by the symptoms, appearance, abnormal resistance, and the fact that cure is effected in a large proportion of cases by stretching the cardia. The study of the ætiology of dilatation of the Œsophagus is thus inseparably bound up with that of cardio-spasm. Before proceeding to consider the theories that have been advanced to explain these associated conditions it is necessary to discuss certain objections that have been raised to the existence of primary spasm of the Œsophagus.

Does Primary Spasm of the Cardia Exist?—Dr. William Hill, whose exceptionally large experience in Œsophagoscopy entitles his utterances on the subject to our respect, has recently published a paper denying the possible existence of primary spasm at the cardiac end of the Œsophagus. In support of his contention he asserts that the circular fibre musculature at the extreme lower region of the Œsophagus is weak, and, if anything, weaker than elsewhere, and quotes passages from Prof. Macalister's "Text-book of Human Anatomy" to show that there is no special muscular sphincter in this region.

In order to obtain first-hand evidence as to the condition of the musculature at the junction of Œsophagus and stomach, Dr. Williamina Abel, Carnegie Research Fellow in the Physiological Department of the University of Glasgow, has made a number of dissections. These confirm the correctness of Prof. Macalister's description as quoted by Dr. Hill. On the other hand, nothing was found in any of the dissections or in the anatomical works consulted to justify Dr. Hill's statement that the circular fibre musculature was specially weak in this region. I would point out, however, that "the modern supporters of the spasmodic theory" do not seek to explain spasm at the lower end of the Œsophagus by the presence of a sphincter. The few writers who have employed the term "cardiac sphincter" have probably done so rather as a matter of convenience than from any desire to account for the pathogenesis; had they used the expression "sphincter-like appearance" in reference to the hiatus Œsophageus no objection could have been raised. The true explanation of cardio-spasm will probably be found to lie in a disturbance of innervation; to this important aspect of the question Dr. Hill has barely referred.

Mention will be made immediately of the various theories that have been advanced in this connection, but I may conveniently preface them by recounting a few physiological facts, which will also serve to prove that spasm at the cardia is possible.

From experimental work it has been found that stimulation of the peripheral ends of the cut vagi causes contraction of the whole œsophagus but dilatation of the cardia: this is essentially the normal process of deglutition. On the other hand, section of the vagi without stimulation is followed by dilatation of the lower part of the œsophagus and contraction of the cardia: this corresponds to the supposed condition in cardio-spasm. The vagi thus control the muscular action—the peristalsis—of the œsophagus and supply a special dilator branch to the cardia. Tonic contraction at the cardia is maintained by the autonomous nervous system, which consists of a fine plexus situated between the two muscular coats under control of ganglia which are independent of the central nervous system. Normally, this tonic contraction is inhibited during deglutition by impulses conveyed along the vagi, and the cardia opens to allow the food to enter the stomach. Secondary closure of the cardia is due to reflex action excited by the acidity of the gastric juice.

Returning to the clinical aspect, the question that next suggests itself is: Have we a correct conception of spasm as it exists at the cardia? We are accustomed to associate in our minds with the term "spasm" a condition of violent muscular contraction, but if we read the reports of a number of cases of cardio-spasm we find that almost invariably the obstruction at the cardia is stated to have yielded on waiting a little. Some writers assert that the cardia-epicardia is always permeable in cardio-spasm. In this connection I might mention that even in animals with both vagi cut, when the spasm is undoubted, it can be overcome comparatively easily by increasing the intra-œsophageal pressure. At one time I myself held a different opinion, and in consequence experienced a mishap that I shall always regret. In a patient with great dysphagia, but with no sign of disease in the œsophagus excepting firm closure at the hiatus, my efforts to overcome what seemed to me to be strong spasm caused a tearing of neighbouring diseased tissue with fatal result. Secondary spasm may certainly have been present in this case, but the main resistance encountered was due to subdiaphragmatic carcinoma. Dr. Hill states that from his endoscopic observations spasm of a really unyielding nature is not found. Has he not been looking, as I did, for what is non-existent? It might be advisable for all of us to remember that in cardio-spasm the spasm is of a yielding character and little more than a state of non-relaxation.

Theories as to the Causation of Diffuse Dilatation of the Œsophagus:

(1) *Primary Cardio-spasm.*—The first explanation of œsophageal dilatation, as already stated, was offered by v. Mikulicz, who attributed it to the retention of food, etc., above the spastically contracted cardia. In support of this view it is pointed out that a stenosis of comparatively short duration, as in cancer, is occasionally found associated with a certain amount of dilatation. In cardio-spasm, which may go on for years or even decades, great dilatation need, therefore, excite no surprise. The muscular hypertrophy of the walls of the distended organ suggests the presence of obstruction to be overcome, as in valvular disease of the heart. Meltzer goes a step further. He believes in the presence of cardio-spasm, and attributes it to inhibition of the cardia dilator. In consequence the cardia, instead of relaxing during deglutition, as it normally should, remains firmly closed. Rosenheim opposes the theory of primary cardio-

spasm because marked and extensive dilatation of the œsophagus above anatomical strictures, both benign and malignant, is comparatively rare, and further, because obstruction at any part of the œsophagus to the passage of ingesta produces, if the muscular strength of the organ be well maintained, regurgitation, but no dilatation.

(2) *Primary Atony*.—Another group of observers maintains that the dilatation is primary. Rosenheim, the chief exponent of this theory, attributes dilatation to atony of the œsophageal musculature, followed by overstretching and distension of the walls, and regards the spasmodic closure of the cardia as secondary and produced by the irritating action of stagnating collections of food on the altered mucous membrane. Quite recently the atonic theory has received support from Holzkecht. His X-ray researches have led him to recognise in a large proportion of those suffering from nervous dysphagia a characteristic condition which he regards as due to an atonic state of the œsophageal musculature. When very thick semi-solid food is swallowed normally it passes through the gullet as a closed column, the length of a finger, in about seven seconds. In the affection in question, on the other hand, each portion of semi-solid food is pushed onward by that next swallowed until a continuous stream courses through the gullet. A variable interval, often a quarter of an hour, may elapse before all reaches the stomach. The dysphagia may be overshadowed by various neurotic symptoms—for example, cramp-like feelings in the throat and chest, retching, attacks of choking, and occasionally inanition may result.

Starck admits the possibility of atony leading to dilatation, but states that no case has been proved, for almost without exception muscular hypertrophy is found at *post-mortem* examinations. This has not been my experience, for in a comparatively small material I have met with thinning twice, in one case to a very marked degree. A case of Lerche's reported this year promises to throw light on the nature of the disease, and to open up new possibilities in its treatment. A piece of banana had stuck in the patient's throat; afterwards she experienced delay in the passage of food through the upper part of the chest, and subsequently was unable to get anything into the stomach. X rays showed a sausage-shaped dilatation. There was not much obstruction to food at the lower end of the œsophagus, but it passed slowly through the upper part. The galvanic current was applied to the interior of the œsophagus in this region, which was undoubtedly in a state of atony. The electrode consisted of four thin steel felt-covered springs. After twenty applications there was surprising improvement, and after ten more the epicardiacardia was stretched. Two months later the œsophagus was found, on examination, almost normal. More than a year after treatment the patient was feeling perfectly well. In this case, according to the author, the primary disturbance was atony of the upper thoracic part of the œsophagus, which delayed the passage of food and thereby irritated the epicardiacardia to spasm.

(3) *General Neurosis*.—The view that simultaneous dilatation of the œsophagus and spasm of the cardia is due to a general neurosis was advanced by Kraus as a result of his observations of a case in which, after death, atrophy of both vagi was found. He considers that it reconciles the two apparently antagonistic theories already described. To explain his standpoint I may again remind you that if vagal transmission is interfered with the œsophageal walls will relax, while the cardia will remain closed and obstruct the entrance to the stomach.

These facts justify one in speaking of a paralytic dilatation of the

œsophagus; they also explain why after death dilatation is found, but no anatomical stenosis. On the other hand they fail to explain the hypertrophy that exists in a large proportion of cases. If the musculature of the œsophageal wall is paralysed in accordance with Kraus's theory, it will not undergo hypertrophy.

Kraus does not assert that atrophy of the vagi is always present in œsophageal dilatation; in fact he refers to cases in which these nerves and their œsophageal branches were demonstrated to be normal; he desires rather to lay weight on the importance of taking the vagi and their connections into consideration.

(4) *Neurosis of the Autonomus Nervous System.*—The action of the autonomus nervous system in maintaining tonic contraction of the cardia has just been referred to, and it is easily conceivable that the tonus of this system may be increased so that normal impulses conveyed by the vagi are too weak to inhibit, and cardio-spasm results.

In Kaufmann's case, which was the first of the kind reported, of the four nerves which receive sympathetic supply and which react similarly pharmacologically—namely the vagus, oculo-motor, chorda tympani and pelvic (erigens)—three were affected.

Last year Heyrovsky reported a case of this nature. The patient was an exceedingly nervous woman who had increased tendon reflexes, absence of corneal and pharyngeal reflexes, and symptoms of heightened tonus of the autonomus nervous system, as indicated by cardio-spasm, dermatography, abnormally profuse sweating, eosinophilia, hyperacidity and marked sensitiveness to pilocarpin. There was no slowing of the pulse. A beneficial effect from atropin could not positively be shown, as other therapeutic measures were employed.

Further evidence pointing to the nervous origin of cardio-spasm is afforded by the nature of the exciting causes and the temperament of some of the patients. A number of cases date from an injury received; others are traceable to the violent vomiting of pregnancy or sea-sickness. Such causes are capable of producing local lesions involving centres independent of the central of the nervous system.

You will recall the fact that after the entrance of food into the stomach the cardia is reclosed by the acidity of the gastric juice. It is easily conceivable that hyperacidity may give rise to undue contraction of the cardia or interfere with its normal dilatation. Hyperchlorhydria is probably, therefore, a potent exciting cause of cardio-spasm. The onset of the disease has been occasionally traced to psychical disturbances, and its course has been found to be influenced by emotions, moods, exertion, etc. In such cases the patient was frequently neurasthenic or hysterical. The bolting of imperfectly masticated or large pieces of food is supposed to be capable of producing œsophagitis and consequent spasm and atony.

(5) *Anatomical Abnormalities.*—Having disposed of the innervation theories of cardio-spasm, I shall now very briefly refer to certain other explanations that have been advanced to account for dilatation at the lower end of the œsophagus.

Luschka has described dilatation limited to a small part of the œsophagus above and below the diaphragm, which he has termed respectively the fore-stomach and cardiac antrum. The fore-stomach has been proved by Zenker to be congenital, and Fleiner has seen it in the living, and dead subject as a dilatation resembling a sac or diverticulum. The condition may long remain latent until for some reason its function is disturbed. In these cases, however, the dilatation or fore-stomach is circumscribed and is quite distinct from the diffuse dilatation we have been considering.

The former may therefore be regarded as a rare variety. The congenital origin of this small class throws no light on the aetiology of the typical diffuse dilatations ordinarily met with. Congenital narrowing of the cardia has been offered as another explanation of diffuse dilatations. The circumference of the normal cardia is stated to be 6·9, 5, and 5·5 cm. by v. Hacker, Leichtenstern, and Stierlin respectively. Stierlin reports a case of great dilatation in which the cardia was only 2·8 cm., and refers to other similar cases.

In connection with congenital abnormalities the investigations of Mehnert may be mentioned. This observer found thirteen physiological narrowings of the œsophagus; the spindle-shaped segment between each two he termed an enteromere. The fore-stomach corresponds to Mehnert's eleventh œsophageal enteromere; while the narrowing of the cardia just referred to might be attributed to the persistence of the thirteenth physiological constriction. The fact that other developmental defects were present in some of the cases supports the view of a congenital origin.

Conclusions.—In conclusion, I venture to express the following opinions: Under the term "cardio-spasm" several distinct pathological conditions have been included. Those due to developmental or anatomical abnormalities should allow of differentiation and correct classification. The existence of primary cardio-spasm is undeniable. Cardio spasm alone accounts for the *ante-mortem* and *post-mortem* conditions found in some cases. In others it affords an insufficient explanation, and further investigation is demanded. The disease is sometimes located in the extrinsic nervous system, as manifested by degenerative changes in the vagus or its œsophageal branches. The most frequent seat of the lesion is probably the intrinsic nervous system, and the disturbing cause an injury, hyperacidity, or other influence exercising a harmful action on the ganglia. A fuller knowledge of the physiology of the autonomous nervous system is likely to assist in elucidating the pathology of cardio-spasm.

DISCUSSION.

Dr. WILLIAM HILL (London) gave a lantern demonstration of slides illustrative of œsophageal stenosis. In the course of it he said that pulsion diverticula, or pressure pouches, were purely peri-œsophageal, and caused dysphagia by extrinsic pressure on the cervical œsophagus. The dissections of Keith, Killian and others showed that they were localised ectasia of the post-cricoidal pharynx, the mucous, submucous and fibrous coats forming the wall of the hernia. The diverticulum passed out between the oblique and fundiform fibres of the crico-pharyngeus (inferior constrictor) muscle. The mouth of the diverticulum could always be demonstrated both by endoscopy and radioscopy (with bismuth paste) on the posterior wall of the post-cricoidal pharynx. Killian was wrong in describing these diverticula as arising immediately above the mouth of the gullet as the fundiform fibres of the crico-pharyngeus intervene, and he was equally wrong in describing this fundiform bundle of fibres as the sphincter of the mouth of the œsophagus, as it was a part of the pharyngeal musculature and sphinctered the deep pharynx. These diverticula were purely pharyngeal in origin, and could not be correctly described as œsophageal or as pharyngo-œsophageal as is often done. The mouth of the gullet was situated at the lower border of the crico-pharyngeus (inferior constrictor) muscle, and had no specialised sphincter development of its own either at its mouth or at its termination.

The term "cardio-spasm," commonly applied to phreno-cardiac stenosis, was usually, if not invariably, inaccurate. The speaker had failed to find evidence of primary spasm, whether paroxysmal or continuous, in the region of the cardia; and the assumption that long-continued primary spasm could give rise secondarily to a permanent anatomic spastic contracture at the cardia was unproved. Deglutitory cramp of a short paroxysmal character and more or less painful was often observed as a secondary symptom in acute and chronic gullet stricture and also when large foreign bodies were impacted. But was there any convincing evidence that deglutitory cramp was ever primary anywhere in the gullet, or that it produced secondary functional stricture of the cardia? The term "cardio-spasm" had been in the past loosely applied to undoubted anatomic—that is, organic—narrowings of the lumen in the region of the cardia, as well as to almost every case of phreno-cardiac dysphagia of uninvestigated or unknown aetiology and pathology.

Dr. WALKER DOWNIE (Glasgow) held that primary spasm of the cardiac orifice did as a matter of fact occur. This opinion was based on a case which he had seen some years ago in consultation with a physician in the Western Infirmary of Glasgow. The patient was a man over sixty years, who had much difficulty in swallowing, and most of the food swallowed returned after an interval, and he was losing flesh steadily. A large bougie could be passed readily down to the cardiac orifice of the stomach, beyond which it or any smaller one could not be passed. Some time later the patient died. At the *post-mortem* examination, performed by the pathologist of the hospital, the œsophagus was found to be thoroughly healthy, with no malignant disease of its walls nor in any of the neighbouring structures, and the conclusion then formed was that the difficulty was due solely to spasm.

The PRESIDENT agreed with Mr. Waggett that the blind passage of a bougie should not be practised, but did not consider that there were a sufficient number of men able to pass the Killian tube, and that under these circumstances the passage of a bougie was the lesser evil.

Dr. HARRIS P. MOSHER (Boston, U.S.A.) said the X-ray plate was often misleading in the diagnosis of œsophageal pouch. He had had two cases where the œsophagoscope proved an apparently typical plate to be wrong. The use of a widely open tubular speculum made it possible to learn the condition of the œsophagus in the cricoid region, and to dispense with the mandrin for the introduction of the tube. He preferred making examinations under a general anæsthetic, because he was trying to get a view of anything, and wanted that view to be as large as possible. In his examinations a tube 20 mm. in transverse diameter was used, and he felt that at times even larger tubes might be employed. The larger the tube the larger the field, and the greater the field the more accurate the diagnosis which it afforded. A negative examination under cocaine meant that everything had to be done over again. Not only was a more exact diagnosis possible under a general anæsthetic, but the treatment which could be carried out was far more efficient. In the dilatation of fibrous strictures, for example, one dilatation under ether or chloroform would accomplish what it took months to secure under local anæsthesia.

Mr. JOHNSON HORNE (London) could not accept, as of general application, the proposition that the use of the œsophageal bougie should now be condemned. The time had not arrived for regarding the œsophagoscope as fully developed or the bougie as an obsolete instrument. The œsophagoscope at present was in only a few experienced hands, and a

good deal of useful work could be done still with the bougie in conjunction with the X rays. The physiological, functional, and malignant forms of stenosis of the gullet, he considered, might be co-ordinated, as the sites of occurrence were commonly the same in all three. Of the diseases causing stenosis of the œsophagus, syphilis, he considered, ranked second to malignant disease, but relatively it was by no means so frequently met with. Tuberculosis of the œsophagus, comparatively speaking, was rarely met with, excepting in the last stages of pulmonary phthisis. Owing to the enforced recumbent position, the ulceration occurred on the posterior wall, and the cicatrisation seldom reached the stage of stenosis.

Dr. BRONNER (Bradford) thought it was not always necessary or advisable to give a general anæsthetic for the use of the œsophagoscope. If the bougie were olive-shaped and passed with care, there was not much danger to the patient; in fact, much less danger than the use of the œsophagoscope in unskilled hands. Strictures of the upper part of the œsophagus were frequently of non-malignant nature and due to fissures of the mouth of the œsophagus.

Mr. C. W. M. HOPE said general anæsthesia was in almost all cases not necessary when examining the œsophagus. Except in a few cases of post-cricoidal growth, he found local anæsthesia exceptionally satisfactory.

Sir StCLAIR THOMSON (London) could not support Mr. Waggett's plea for the abolition of the bougie, for in many years' practice he had never had any anxiety from the careful use of the solid bougie, and yet in his early days of œsophagoscopy he had had many moments of anxiety. Fortunately he had never had, nor been associated with, a fatal accident from direct examination, but one of his cases had alarming emphysema of the neck with damage to the cricoid cartilage. Therefore he thought that teachers should insist on the fact that œsophagoscopy was a much more delicate and dangerous proceeding than direct tracheoscopy. Of course, once acquired, œsophagoscopy was a safe and sound procedure, and he should abolish the use of blind bougieing.

Mr. HERBERT TILLEY (London) thought that, while the mandrin was quite unnecessary in the hands of the practical œsophagoscopist, it would not be wise to deprive the beginner of its aid in enabling him easily to enter the upper regions of the gullet. To pass the metal tube into this region required considerable practice, and only by this could the beginner learn the amount of pressure necessary to overcome the resistance in the cricoid region: in his days of inexperience the mandrin would probably be safer than the metal tube. The speaker also thought that the olive-headed bougie was not entirely useless or to be discarded, for nothing so effectually cured cases of functional dysphagia as the passage of such an instrument. He was still inclined to regard the condition as a functional spasm of the musculature in the upper gullet; if not, how would Dr. Hill explain the sense of resistance and its sudden giving way to the bougie with complete cure of the dysphagia? He had had many opportunities of using radium in large doses and properly screened for malignant stricture of the gullet, but at the Radium Institute they had never seen a cure of any form of squamous epithelioma affecting the mucous membrane of any part of the alimentary tract, although very great relief to dysphagia followed the dilatation of, and insertion of the radium capsules into, the malignant stricture. Some of this relief was probably due to mechanical dilatation of the stricture.

Mr. WAGGETT, in reply, said he wished to emphasise the following points: (1) The blind passage of the bougie left the surgeon in ignorance

as to the nature of the obstruction: (2) it was therefore desirable that at least one surgeon in every hospital should be able to pass the cesophagoscope with safety through the healthy portions of the gullet; (3) it was unnecessary for diagnostic purposes to pass the instrument into and past the diseased area, and it should not be difficult to train students in this country, as was done in other countries, to pass the instrument with perfect safety, under direct visual control, to within a quarter of an inch of the lesion.

Dr. BROWN KELLY, in his reply, maintained that the obstruction at the cardia in so-called cardio-spasm was due to spasm and not to paresis. This he had shown was caused either by abolition and inhibition of the cardia tonus or by the action of the autonomous nervous system in overpowering the dilator fibres of the vagus. In many cases of cardio-spasm there was epigastric pain, but this was not essential. In his opinion cardio-spasm did not imply violent contraction, but rather a condition approaching one of non-relaxation.

Dr. HILL, in reply, said that, according to observations with his deep pharyngoscope, Prof. Kahler and others were wrong in describing the upper view of the closed mouth of the cesophagus as appearing as a slit. The partially closed post-cricoidal pharynx presented a transverse slit-like lumen during the passage of the endoscope, but the true closed mouth of the gullet appeared as a dimpled pucker or rosette. Exner used radium salts enclosed in glass tubes, whereas their radium salts were enclosed in platinum screens of 2 mm. thickness, with an outer rubber covering 1 mm. thick. Moreover, there were other refinements of technique, so that the radium tube remained accurately in the cancerous area, so that no cauterisation took place, as was probable, at all events, in Exner's earlier applications. Dr. Brown Kelly's very interesting experiments and observations on section of the vagi seemed to him to support very strongly his (the speaker's) views that functional phreno-cardiac dysphagia was of the nature of atony, for Dr. Kelly showed that after section of the vagi the whole thoracic gullet was actually dilated—that is, atonic and paralysed—and it could scarcely be argued that the phreno-cardiac region was presumably in a state of spasm whilst the rest of the gullet was admittedly atonic. Those who loosely use the term "spasm" made no distinction between paroxysmal deglutitory spasmodic cramp and long-continued tetanus, and they did not appear to realise that primary spasm without subjective sensations presented great difficulties. Moreover, they made no distinction between hypothetical functional spasm and an alleged post-spasmodic anatomic contracture. Dr. Downie's 24 cases, recorded as "spasmodic," out of a total of no less than 100 cases of alleged gullet stricture, could not be accepted as unequivocal evidence, as the diagnosis had been made by the old methods of investigation in most instances. In answer to Mr. Tilley's remarks, Dr. Hill pointed out that the relief afforded by bougieing was no presumptive evidence of spasm, as that procedure would merely accentuate spasm, whereas bougieing admittedly relieved paresis by mechanical stimulation, and was the accepted treatment for the relief of soft inflammatory tumefaction, as well as for tighter anatomic strictures.

(To be continued.)

ROYAL SOCIETY OF MEDICINE.—OTOLOGICAL SECTION.

October 18, 1912.DR. J. DUNDAS GRANT, *President of the Section, in the Chair.*

Lateral Sinus Thrombosis; Serous Meningitis; Recovery.—**Dan McKenzie, M.D.**—Male, aged twenty-five, with middle-ear sup-puration (left) of fourteen years' duration, came to hospital on January 10, 1912, with pain in and around the ear, vertigo and rigors. Temperature oscillating between 100° and 104° F. Some stiffness of the neck on the left side, slight nystagmus, especially towards the left. Polypus in the left meatus. Scars of old operations over the mastoid process. January 11: Mastoid operation; fissure in posterior meatal wall led into a very large cavity full of cholesteatoma. When cleared out, the following structures lay exposed: Behind, half an inch of the lateral sinus, covered with granulations, and a circular area of the dura of the posterior fossa medial to the lateral sinus; in the tympanic region, the facial nerve was exposed from the genu to near its exit at the stylo-mastoid foramen. The nerve was covered with granulations, and the meatal polyp previously noted was found to be attached to it. The posterior meatal wall was destroyed as far out as the cortex. I fully exposed the dura of the posterior fossa by removing the papyraceous bone that covered it; it bulged somewhat. The lateral sinus was opened and cleared of clot upwards until blood flowed freely. Pus was seen welling up from the bulb. January 15: Pyrexia and rigors continuing, the jugular vein was tied and resected in the neck, and the lateral sinus groove opened inwards towards the bulb. January 16: Severe occipital headache and slight head-retraction. Nausea. Pulse 60, very irregular. Respirations 14. Temperature 98° to 102.6° F. Dynamometer: Right 142; left 112. Slight spontaneous nystagmus to both sides. The exposed dura of the posterior fossa, which was now markedly bulging and pulseless, was opened by a long incision without any anæsthetic. Cerebro-spinal fluid under tension. Cerebellum explored with scalpel without result. January 19: Meningeal symptoms but little relieved. Under chloroform, labyrinth opened and wire drain inserted in internal auditory meatus. In the outer labyrinth wall, deep to the facial nerve, the cholesteatoma had made a considerable excavation, with the nerve strung across it. This excavation had been shut off by bone formation from the rest of the labyrinth. January 20: Facial paralysis observed after operation. January 20 to 24: Temperature oscillating between 97° and 102° F. Pulse and respirations averaged 80 and 16 respectively, and the meningeal symptoms moderated. Hernia of the brain at the dural opening. Wire drain, which did not act well, removed. January 25 to 27: Temperature normal. Meningeal symptoms absent. January 29: Temperature rose to 101° and 103° F. Meningeal symptoms recurred. Lumbar puncture; one ounce of cerebro-spinal fluid withdrawn. Examination: "Leucocytes numerous; a few lymphocytes. No bacteria. Albumoses. Nucleo-globulins well marked.—Wyatt Wingrave." January 31: Temperature normal again. February 2: Temperature rose to 102° F., with a re-appearance of headache, and occasional irregularity in the pulse. Lumbar puncture; two drachms removed. February 5 and onwards: Tempera-

ture normal. Progress uninterrupted. The hernia has disappeared; the facial paralysis remains; the post-aural wound is still open, awaiting a plastic operation. The prompt fall of temperature and disappearance of meningeal symptoms on two occasions after lumbar puncture is not the least interesting feature in the case. I have recently had a similar experience in another case with occipital headache and malaise, without fever, following a labyrinthotomy for suppuration.

Mr. HUNTER TOD asked why the jugular vein was not tied and resected at the first operation. There seemed to have been every indication for doing so; the symptoms were typical, and pus was said to have been welling up from the bulb. The subsequent condition of the patient was, he thought, partially due to the operation not having been completed at the first occasion. From his own personal experience of over seventy cases, he was sure the best results were obtained if the big operation were done straight away, rather than postponing part of the operation. He would also like to know why it was necessary to go through the labyrinth to drain the internal meatus. If he had operated on the case he would have resected the jugular in the first instance, and if meningeal symptoms arose, he would have incised the dura mater. By removing the bone in front of the lateral sinus, towards the semi-circular canals, and then exposing the brain surface freely, the infected area could be well drained. If symptoms pointing to internal ear trouble afterwards arose, then he would open up the cochlea. In septic cases it was risky to drain through the internal ear.

Dr. MILLIGAN said he had intended to ask the same question that Mr. Tod had done. The welling up of pus from the bulb was an indication that the deep part of the vein, and probably the bulb also, was involved, and he thought it would have been advisable at that moment to have ligatured the internal jugular vein. He also asked what was the reaction of the cerebro-spinal fluid. Clinically, it was very important to know whether it was alkaline or acid. The normal reaction was alkaline, but if meningitis was passing from the serous to the purulent variety, the alkalinity diminished, and the reaction became acid.

Mr. ALEXANDER SHARP asked whether the cerebro-spinal fluid was removed as a therapeutic measure, or for investigation. If the former, the amount seemed to be too small to be of value. Sinus cases often produced surprises. Sometimes the classical symptoms were present, yet the surgeon found no sinus disease; at other times there might be no reason to suspect sinus disease, but it was there. He was asked to see a patient suffering from an ordinary furunculosis. On seeing her again a month later there was a diffuse inflammation of the external meatus with stenosis of the canal. The only symptom had been intense earache, which occurred every night and lasted for about three hours. Temperature and pulse normal. No previous ear trouble. On operating, pus was found in the middle ear, the mastoid antrum and cells were congested, and on exposing the lateral sinus about $\frac{1}{2}$ oz. of a milky fluid welled up. Convalescence was uneventful. There seems to be need for revision of the signs and symptoms associated with sinus disease. In this case there was nothing to suggest that condition.

Dr. McKENZIE replied that he sympathised with what Mr. Tod and Dr. Milligan had said in regard to the labyrinth, but the case was an extraordinary one, the cholesteatomatous cavity being the largest he had ever seen. Amongst other organs invaded by the cholesteatoma was the labyrinth; there was a comparatively deep recess behind the facial nerve, and he concluded from the appearances that the labyrinth was

destroyed, and that his surgical measures would make no difference to the state of matters there. But it turned out to be one of the cases described in which the slowly advancing disease was met in the labyrinth by the formation of an osseous barrier. When he broke into the labyrinth through this wall he came upon clear labyrinth fluid; there was no suppurative of the labyrinth. He had not considered making labyrinth tests, because at the first operation he believed that the labyrinth was seriously involved. The question of tying the jugular had been raised many times in connection with these cases, and some people had a tendency to delay ligature until it was seen whether the opening of the lateral sinus had not removed the danger. He had waited a couple of days in this case, and as the symptoms showed that the danger was not removed, he tied the jugular. He did not think the delay made any difference to the meningeal symptoms. The cerebro-spinal fluid removed on the second occasion was as much as could be got to flow.

Epithelioma of the Meatus.—**Dan McKenzie, M.D.**—Male, aged fifty-two. Suppuration of middle ear (left) for twenty years. Pain and facial paralysis came on a month before his first attendance at hospital. The fleshy and tender nature of a polypoid growth in the meatus raised suspicion of malignancy, which was confirmed by the microscope (epithelioma). An attempt was made to remove the growth. A post-aural incision was made, and the typical mastoid operation performed; thereafter the membranous meatus and all the walls of the bony meatus were freely removed. The middle ear showed granulation of the usual purulent type; the apparently malignant growths seemed to be seated in the meatus, which was cut across close up to the auricle. Recurrence was observed six weeks after the operation, and the disease has made considerable advance since. The trend of the disease seems to be towards the outside, herein differing from epithelioma of the tympanum, in which the disease tends towards the naso-pharynx.

Carcinoma of the External Ear.—**W. Milligan, M.D.**—**E. L.**—, male, aged sixty-five. Ten months previous to admission to hospital complained of a dull, smarting pain in the upper part of his external ear. A small hard nodule formed upon the free border of the helix. This broke down and ulcerated. On admission the external ear presented the appearances as seen in photograph (photograph shown). Several of the peri-auricular glands were enlarged, but apparently were not malignant. Operation advised. Auricle removed. (Macro- and microscopic specimens shown.)

Malignant Disease of the Middle Ear; Invasion of Mastoid Area and Parotid Gland.—**W. Milligan, M.D.**—**A. T.**—, male, aged twenty, had suffered from post-scarlatinal suppurative otitis media since the age of three. On admission to hospital the external meatus was found blocked with a greyish, sloughy-looking polypus. Complete left-sided facial paralysis. Hearing power upon affected side *nil*. History of repeated attacks of vertigo. Slight oedema over mastoid process and displacement of auricle. Swelling in front of tragus. Mastoid cells opened and found to be invaded by growth, apparently springing from inner wall of inner ear. Fallopian aqueduct eroded and facial nerve found degenerated. Horizontal semicircular canal eroded. Growth removed as completely as possible. Post-auricular wound left open. Is

light treatment advisable, or are injections of Coley's fluid worth trying?

Dr. MILLIGAN said he would be glad to have the specimen submitted to the Morbid Growths Committee of the Section. The report which he received from the clinical laboratory of the infirmary was that it was carcinoma. He wished to know from whence it originated. There was a history of prolonged suppuration from the middle ear; possibly it was a growth of the parotid gland which had invaded the middle ear. There was not much pain complained of.

The PRESIDENT (Dr. DUNDAS GRANT) said his experience was that when such a growth began in the temporal bone there was always considerable pain. This would seem to support the idea of origination in the parotid gland in the present case.

Dr. DAN MCKENZIE remarked that Dr. Milligan said that the clinical history suggested that it grew from the middle ear, and yet subsequent recurrence of the growth was outwards.¹ Mr. West and Mr. Scott had pointed out that the ordinary growth of malignant disease in the tympanic cavity was inwards towards the naso-pharynx. This suggested that the case had originated external to the tympanic cavity.

Bilateral Attic Disease.—F. F. Muecke, F.R.C.S.—Patient is a male, aged forty. Acute otitis in both ears ten years ago. There is necrosis and perforation of the outer bony walls of both attics; left drum also shows a depressed scar. Bone conduction normal in both ears. Whisper, 2 in. to 3 in. in both ears. Slight suppuration still present.

Epithelioma of Auricle and External Auditory Canal.—Hunter F. Tod, F.R.C.S.—Female, aged seventy-six. The tragus was removed by operation over four years ago; also has had X rays and radium. A polypoid growth now fills external meatus, and a superficial ulceration is spreading outwards along the concha. Does the age of the patient and the slowness of the growth contra-indicate an extensive operation?

The PRESIDENT pointed out that there seemed to be no vacuolation in any of the cells, such as one had been taught to recognise in rodent ulcer.

Dr. URBAN PRITCHARD, discussing the question of operation, said that in view of the fact that the patient was old and feeble he did not think operation was advisable.

Mr. A. CHEATLE thought the patient should have the benefit of operation; she was in good health, and might live another ten years if it were none.

The PRESIDENT agreed that something should be done for the patient in the way of operation. There was no glandular involvement, and the tumour was of quite slow growth.

Mr. Tod replied that the patient was nearly cured by radium last February, but she left the hospital too soon. He had not seen her until recently. He wanted advice as to whether he should curette out the ear and apply radium, or whether a more radical operation should be performed. In favour of the simpler method was the age of the patient, the long duration and slow progress of the disease, and the fact that a cure had already nearly been obtained by this method. In favour of

¹ Note.—Dr. Milligan did not say that the growth had recurred. Only one operation had been performed, and that for removal of the primary growth.

the more radical operation was the complete elimination of the disease and the avoidance of intense pain at a later stage of the disease, which would occur if no operation were performed.

Epidiascopic Demonstration of X-ray Negatives of Normal and Pathological Temporal Bones.—W. Milligan, M.D.—Dr. Milligan had been engaged along with Dr. Barclay with X-ray photography of various pathological conditions, especially ear disease, and was bringing observations before the Section so as to receive hints as to how the method could be perfected. The slides, although good *negatives*, were somewhat difficult to interpret on the screen. At the Manchester Royal Infirmary they had been making skiagrams of every case of chronic suppurative otitis media submitted for operation independently of the diagnosis which had already been made. Speaking generally, it had not thrown much light on the clinical diagnosis, but there had been occasions when the skiagram had saved an operation. A patient attended with acute middle-ear suppuration, and considerable pain about the ear, perhaps with cedema and periostitis. The instinct was to conclude that there was pus in the mastoid cells, and straightway to operate. But in some such cases the mastoid cells had been unaffected, and the case was one of pure periostitis. The radiographing of mastoids was certainly very difficult; the radiographer must be expert and the patient very quiet, as the slightest movement vitiated the picture. There was at present a lack of unanimity as to how the patient should be placed, and what focus tube should be used. At the infirmary they had placed the patient prone on the table, and turned the head round to an angle of 90°, the head being put on a platform of wood, which was inclined at an angle of 25° with the horizontal. The plate was placed under the affected ear, with the focus tube about 9 in. above the head, and so placed that the centre of the focus tube struck a point an inch above the highest point of the pinna. Dr. Logan Turner was in favour of the patient's auricle being drawn away from the mastoid when the skiagram was taken. That had been tried, but had been given up. If the mastoid was inflamed and tender, it was difficult to get the patient to allow the auricle to be drawn forward and kept there when he was lying on a hard substance. Even if the auricle came into the picture it was easy to disregard it with the eye, and read what was deeper. The X-ray photograph should be taken from *both* sides so as to have the contrast. If one had a sufficient number of X-ray plates, and studied them carefully, he thought it was possible, from plates alone and without seeing the patient, to know whether that person had a normal mastoid or had acute or chronic mastoiditis. There were sufficient points, notwithstanding the variation of the negatives, to enable one to differentiate. It was also useful in determining the amount and extent of malignant disease in and around the ear. He showed a picture of malignant disease of the ear where the growth could be seen invading the deeper part of the bone, where one had not been inclined to operate, but had operated in order to relieve tension and pain. The negative should always be examined dry, as it then showed the detail much better than when wet. The principal points were that in an acute mastoiditis the general mastoid area was obscured; in chronic mastoiditis it was often quite opaque. The position of the lateral sinus groove was very important. In a normal temporal bone the X-ray photograph scarcely showed the lateral sinus at all; but in acute mastoiditis one could see the outline of the groove, while

in a chronic case it came out very distinctly. He could not say anything very definite about the petrous bone. In one or two instances they thought they saw sufficient evidence to diagnose tubercular lesions in the petrous: there had been lesions there, but he was not sure that it was a correct interpretation beforehand. He had had the case of a child with both ears externally deformed: no meatuses at all, and the parents were anxious to know whether anything could be done. It was only six weeks old. The child was taken to the radiographer, to see if there was a labyrinth. The result was that though there was a labyrinth, it was so badly developed that it was considered that no operative treatment would be of any practical value.

Left Otorrhœa and Right Temporal Sphenoidal Abscess.—**Richard Lake, F.R.C.S.**—The patient, a male, aged thirty-nine, was a gardener by occupation. Previous history: Never had any serious illness, but he has had an offensive discharge from the left ear for many years. May 14, 1912: First seen by Dr. Charles Wade, of Boscastle, Cornwall. He complained that on May 10 and 11 he had been very weary, and on May 13, when rising in the morning, complained of giddiness, and was sick after taking a dose of Epsom salts. He was repeatedly sick for some days and suffered much from giddiness. The bowels were obstinately confined. Temperature 97.4° F.; pulse 60. So he continued more or less until May 22, when Mr. Lake found him with a temperature of 103° F., and pulse 68. The discharge from the left ear was free and offensive, and remained so till May 26, when it gradually became less, and by June 4 it was scarcely perceptible. The ear had been regularly syringed with a solution of lysol. Since that time he had had little or no pain. The bowels had not been opened since May 30, but three stools were passed between May 27 and 30 which were quite characteristic of enteric. The urine was passed involuntarily. On May 29, 30 and 31 there was much quiet muttering delirium, with subsultus tendinum and carphology. The pupils had always been equal and reacted alike; discs normal; no paresis of any part. On May 30 some blood was taken and sent to the Clinical Research Association for a Widal reaction; the result was negative. There have been no suspicious spots. The spleen has not been felt, and pulse never exceeded 74, nor showed any irregularities. There have been no pulmonary symptoms. (The date of this report is June 4.) The patient was admitted to the Royal Ear Hospital on June 5. He was examined by Dr. Bernstein with a view to deciding whether there were any symptoms of cerebral or cerebellar abscess, but none were found. The eyes were also examined by Mr. Lyle, and the discs were found to be normal. On June 6 radical mastoid operation was performed on the left side, and a patch of caries was discovered in the region of the superior horizontal canal. This was scraped out, and the labyrinth opened up and found to contain pus. No stapes were present. As there was no indication for further exploration, nothing further was done. The patient seemed relieved by the operation, and was markedly better for two days, when the temperature began to rise again in the morning, falling towards night, never, however, getting above 101° F. His general symptoms seemed to point to the presence of pus somewhere in the cerebrum. On June 12 an exploratory operation of the brain was performed, and the middle fossa opened out and explored in every direction. No pus was found; the dura bulged and did not pulsate. On incising the dura a large amount of serous fluid escaped. This was cleared. A large amount

of serous fluid escaped, however, when exploring towards the fissure of Rolando. It should be stated that an investigation of the cerebro-spinal fluid on June 12 showed moderate lymphocytosis, no pus-cells, and a very few epithelial cells. The patient's condition became steadily worse, and further exploration was made on June 16, when a further large amount of fluid was removed from the same situation as previously. There was now distinct pulsation of the brain-tissue. No anæsthetic was used for this operation as the patient was only semi-conscious. On June 17 he had a fit at 9.15 p.m., which started with a spasm in both eyes and left arm; no movements to the right. The right arm was slightly contracted, but the left was flaccid. The wound was opened up, the plugging removed, and the wound was cleansed. A considerable amount more fluid, tinged with blood, was released from the same situation as before and a rubber drainage-tube was passed to enable it to flow freely. There was a slight spasm of the eyes and both arms, but especially the left arm, just as the patient was being removed from the table. The patient died on June 18, the temperature having risen to 104° F. There had never been any opportunity of making a thorough examination of the patient, as from the very time of his admission he was not sufficiently rational to be able to answer questions intelligently, and he was more often unconscious and suffering from delirium, combined with subsultus, than not.

Mr. LAKE added that at the *post-mortem* was found a right temporo-sphenoidal abscess, also a non-suppurative infarct in one lung, the size of a five-shilling piece. Also, over the right temporo-sphenoidal area there was a patch of recent suppurative meningitis.

Mr. HUNTER TOD asked if there was any disease of the right middle ear. He could not believe that the temporo-sphenoidal abscess on the right side was due to the middle-ear suppuration on the left side. If it were possible for a temporo-sphenoidal abscess to occur on the opposite side of the ear, it was a matter of great importance, because hitherto one had been taught that if only one side was infected intra-cranial affection on the other side could be excluded.

Dr. MILLIGAN asked whether it was not possible that the temporo-sphenoidal abscess had its infection from the lung? One knew that brain abscess was not altogether uncommon in cases of pulmonary disease. Possibly the infection in this case occurred at the time the patient had the infarct in the lung.

Mr. KISCH suggested that the case was really one of malignant endocarditis; that would explain the presence of the infarct and abscess.

Mr. LAKE, in reply, said he had no explanation to offer, but he had brought the specimen. As the kidneys and other organs were normal he did not think it necessary to mention them; the *post-mortem* examination was a complete one. There was no suppuration in the infarct, and the relationship to the cerebral condition might be direct or indirect.

A Simplified Apparatus for Inflating with Heated Air.—**P. Macleod Yearsley, F.R.C.S.**—Mr. Yearsley remarked that a good deal had been said and written on the Continent during the last two or three years about the use of heated air, inflated through a catheter, but most of the apparatus for the purpose were somewhat clumsy, and many of them were heated by an electric lamp. The best and simplest so far had been one shown by Dr. Andrew Wylie at the British Medical Association meeting at Birmingham last year. That apparatus he had

recently modified with the idea of making it simpler and lighter for use. It consisted of an inflating bag having an aluminium chamber, with a lining of asbestos to prevent over-heating. Inside the chamber was a small cautery burner, and on the other side a nozzle for placing in the catheter. Below was a switch and plug with cords attached to the battery. It was a collar switch, which put the current on quite easily by pushing upwards. It was sufficiently light to use like an ordinary inflating bag. He had been using it for six months, and it heated the air very comfortably and sent it direct into the catheter. Krohne and Sesemann were the makers.

Mr. HUNTER TOD asked if Mr. Yearsley had tested the temperature of the air at the other end of the catheter when he used his instrument. He had found that even $\frac{1}{2}$ in. from the end of the catheter the temperature of the air was not raised, and he did not therefore think one could get warm air into the middle ear by means of the catheter. He quite admitted that the warm air as it passed out of the catheter gave a sensation of comfort in the throat, but he thought that the good results considered to be obtained from hot-air treatment were due to the simple inflation of the ears rather than to the hot air itself.

Dr. H. J. DAVIS said that when the dentist blew hot air on to one's tooth to dry a cavity before filling it was not always very comforting. Heating the end of the hot-air syringe heated the air passing through the cannula.

Dr. WATSON-WILLIAMS said that unless there was perforation of the drum he did not see how the hot air could get well into the ear up the Eustachian tube; even if it came out hot at the end of the instrument the volume of air was increased in the middle ear by politzerisation or catheterisation, and that gave a sense of inflation.

Dr. KELSON said he had used the method for six or seven years, and he disagreed with Mr. Tod's remark. There was certainly hot air at the end of the catheter, and when patients said it was hot in the ear he had no reason to disbelieve them. A difficulty with apparatus was usually the weight, but he had been using a modified dentist's design with good results. The point to be careful about was not to burn the patient's nose, and that could be obviated by having a fibre catheter. Certainly in cold weather it was more grateful and beneficial to patients than blowing in cold air.

Mr. YEARSLEY replied that he would be pleased to give a demonstration some time. The air was hot even 2 in. in front of the catheter, and patients said the air was heated. As to results, beyond increased comfort to the patient, he was bound to say he had not yet observed them. He designed the apparatus to see whether there was any therapeutical effect from the hot air, but he had found none.

Capillary Angioma of the Right Membrana Tympani.—E. A. Peters, M.D. — M. H—, aged forty-eight, labourer. Capillary angioma of the posterior upper quadrant of the right membrana tympani: the region of the malleus is involved. The lower part of the right face, including the lobe of the ear and the auditory meatus, is affected below a line drawn from the auditory meatus to the mouth. The right side of the palate and tongue are also marked. The patient has been deaf for about twenty years. No evidence of syphilis can be traced. Stop watch: C on mastoid, —20 seconds right and left; C^t on mastoid, —2 seconds right and left. Tuning fork: 32 vibrations per second on mastoid, —12 seconds right and left.

A Horse-bean removed from the Middle Ear during a Radical Mastoid Operation for Prolonged Otorrhœa in a Boy, aged nine; with two Sequestra, containing the Outer Wall of the Canal of the Facial Nerve.—**H. J. Davis, M.B.**—The boy was brought to the hospital with a history that "polypi had been removed from the ear on several occasions, but they quickly returned." It was evident that the mastoid was extensively involved, and he was operated on at once. The mastoid process, the interior of which was bathed in pus, came away entirely, and the facial nerve could be seen lying on the digastric muscle. The middle ear was occupied by a foreign body, which was surrounded by granulations, and proved to be a horse-bean which was germinating. The history points to the foreign body having been there about four months, but the boy never mentioned the fact. The wound healed rapidly, but facial paralysis was present, and this should recover.

A Case of Non-infective Meningitis Five Months after Cerebral Abscess.—**W. M. Mollison, M.C.**—**W. H.**—, aged nine, attended the aural out-patient department at Guy's Hospital on March 10, 1912, suffering from headache and left otorrhœa and a squint. His mother had noticed the squint for six weeks, and indeed the boy had been so ill (vomiting and headaches) that she had kept him in bed, but had not sought medical advice. The otorrhœa was very profuse, pus filling the meatus three times after removal in the space of an hour. The squint was found to be due to weakness of the right external rectus. Mr. Eason examined the eyes, and reported advanced optic neuritis in both eyes. There was a little swelling over the mastoid process and slight displacement of the auricle. Operation was performed; cholesteatoma was found in the antrum and the tegmen antri was eroded, and a nipple-like projection of dura projected into the antrum: pus was seen coming from this. A crucial incision was made into the dura mater and the abscess opened; an ounce of thick, foul-smelling pus was evacuated, a double rubber tube put in, and the wound packed with gauze. A small hernia subsequently appeared, but was cut off, and the boy made a good recovery, though the cavity was difficult to deal with on account of the bulging down of the dura mater. In August last the boy complained of headaches and tenderness about the meatus, and on August 22 the headache was very severe and the boy was drowsy, and the temperature was 101.5° F. and pulse 120. He was again admitted. There was still a small sinus behind the auricle, and the dura was bulging down so as to fill the meatus. Incision over the old wound showed the dura mater bulging over a small cerebral hernia; it was incised but no pus found. A lumbar puncture was now performed, and the cerebro-spinal fluid was discovered to be markedly opalescent; obviously meningitis was present. The dura mater was now freely incised (after removing a considerable area of bone) and strips of gauze inserted under it in several places. The immediate result of the operation was great improvement in the patient's condition; in a few hours the pulse fell to 84 and the headache disappeared; 10 c.c. of a polyvalent anti-streptococcal serum were given under the skin. Lumbar puncture was repeated twenty-four hours and forty-eight hours after operation, and three or four pints of normal saline were given. Bacteriological examination of the fluid was carried out three times, and cultivations remained sterile after three days' incubation; the fluid contained large numbers of polymorphonuclear cells. Several examinations failed to reveal any organism. The fluid finally became quite clear, and the boy recovered completely.

Dr. H. J. DAVIS said that just before the Boston meeting he was afflicted with a similar case, but somewhat worse than this. He took photographs of the case over to Boston and asked the opinions of several as to what should be done. Some said it should be cut off, others that it should be left alone. The hernia was as large as an apple. Mr. Ballance advised him to leave it alone and it would disappear. When he got back it was healed over. He would show the case at the next meeting.

Dr. MILLIGAN suggested that graduated pressure should be applied to the hernia by means of a lead plate. Repeated lumbar punctures might assist the result.

Dr. PETERS said it might be possible to use celluloid collodion, which could be supplemented by lumbar puncture. That failing, pressure could be made as Dr. Milligan advised.

Mr. HUNTER TOD remarked that cerebral hernia did not always disappear if left alone. Several years ago he showed a boy with a large cerebral hernia with granulations. Some advised that it be cut off; others said pressure should be applied. He did nothing. Later the boy got erysipelas, and after that the skin grew over it, but the hernia had remained. Otherwise the boy was quite well. In the cases in which he had tried to remove the hernia he found the skin very closely adherent to the surface of the hernia. In one case the patient died soon afterwards from meningitis. In another case, in which he was successful, he separated the skin from the edge of the hernia and exposed its bony margin. More bone was removed, so as to make the opening into the skull larger, but the dura mater was not injured. With regard to Mr. Mollison's case, Mr. Tod did not advise anything being done at present, as the wound was still somewhat septic.

The PRESIDENT remarked that it had been said that if there was a hernia owing to a hole in the skull, the best way to get rid of it was to make the hole larger. This probably conveyed a germ of truth, for a decompression operation in another part of the skull would relieve it if there were symptoms. As there were no symptoms in the present case it was scarcely worth while to run the risks of trauma which an operation might involve.

Abstracts.

THE PHARYNGEAL TONSIL.

Mackenzie, John R.—The Massacre of the Tonsil. "Maryland Medical Journal," September, 1912.

There has probably been no paper recently published on this side of the Atlantic that has been more widely discussed or more frequently reproduced in medical literature. The author has been induced to write the paper as a formal protest against the indiscriminate and wholesale removal of tonsils, which, he says, is the chief and most glaring abuse to the laryngology of the day. Furthermore, he considers this protest is in the interest of the public health and public safety. He agrees that there are hosts of conditions that call for more or less complete destruction of

the tonsils. His contention is that in the selection of cases for operation one should be guided by a sane and safe conservatism and common-sense.

Mackenzie speaks of the tonsil question as never having been in the history of medicine such a lust for operation. He speaks of it not simply as a surgical thirst, but as a mania, a madness, an obsession. He considers the question of operation on the tonsil from the following standpoints:

(1) The functions of the tonsils are in the present state of our knowledge unknown.

(2) Whatever its functions might be—and the production of leucocytes is undoubtedly one of them—the tonsil is not, as is generally taught and believed, a lymphatic gland. He is inclined to agree with Jacobi that it may assume the rôle of the thymus after birth, or when the latter gland ceases to functionate or disappears.

(3) The rôle of the tonsils as portals of infection, like all new doctrines in medicine, has been greatly exaggerated. Too little attention is paid, Mackenzie thinks, to the other regions in the upper respiratory tract in considering the avenues of infection.

(4) The hypertrophied lymphatic tissue of the vault of the pharynx (adenoids) does harm chiefly through obstruction. Restore normal respiration in the child, and in a large number of cases the tonsils will take care of themselves.

(5) The mere size of the tonsil is of itself no indication for removal, except it be large enough or diseased sufficiently to interfere with respiration, speech, or deglutition, in which case it, or a sufficient portion, should be taken away without delay.

The lesson the author wishes to give is that if in infancy and childhood we pay more attention to the neglected nasal cavities and teeth, we will have less tonsil disease and fewer tonsil operations.

Perry Goldsmith.

Wilson, J. Gordon.—**The Tonsils in Childhood.** "Amer. Journ. Dis. Child.," May, 1912, p. 277.

In the controversy of tonsillotomy *versus* tonsillectomy the author ranges himself on the side of the conservatives, because he considers that the tonsils subserve a special function, and this he bases on the following circumstances:

(1) The palatine tonsil is present in nearly all mammals, and the organ always contains a channel communicating with the pharynx.

(2) Developmentally the tonsil is not a simple lymph-node.

(3) In addition to the well-known theory of the tonsils being the source of the "salivary corpuscles," the author claims for them a metabolic function, without, however, suggesting what this metabolic process may be.

(4) Anatomically, the tonsil passes through a period of activity during developmental life, and there is, therefore, no evidence for the supposition that in man it is a recessive organ.

(5) Finally, the author doubts the statement that complete enucleation is not followed by any local or general disturbances. He calls for more careful and accurate investigations on this point.

[The paper is suggestive rather than convincing, and should be read in its entirety.—*Abs.*]

Dan McKenzie.

Swaine, H. L.—Are Tonsils a Menace or a Protection? "Annals of Otolaryngology," etc., vol. xx, p. 545.

Swain concludes: (1) That logically tonsil tissue must have a function, and if so, it is to the young that it is of most value. (2) If it is necessary to operate in children on the faucial tonsils, which are merely large and not diseased, then there are surely perfectly safe, sane, and effective methods other than complete tonsillectomy to deal with the problem. Be thorough with the adenoids, but save some healthy tonsil tissue. (3) In adults, when the tonsil is diseased, radical procedure is justifiable.

Macleod Yearsley.

Scheppegrell, W.—The Tonsils and General Health. "New Orleans Med. and Surg. Journ.," July, 1912.

After briefly describing the anatomy and physiology of the tonsil, the author gives a general *resumé* of the pathology, and indicates the principles of treatment. The tonsil is claimed to be the most frequent seat of the initial lesion in diphtheria, especially when unhealthy the bacillus may remain in the crypts and cause recurrent tonsillitis, when no culture can be prepared from the surface. Tubercular infection is by no means infrequent, and Baup is quoted as giving the percentage of tuberculous tonsils as 6. Many cases of nephritis consecutive to tonsillar infection have been traced to the diplococci of Fraenkel, which may be found in the urine. Occasionally a considerable interval occurs between the tonsillitis and the renal infection.

A severe epidemic of tonsillitis in Baltimore last January is briefly noticed; this was thought to be due to pneumococcic infection, and was marked by a great tendency to inflammatory complications in various organs.

The author is strongly in favour of enucleation of the tonsil when removal is desirable, being of opinion that tonsillotomy or slitting of the crypts may, by causing cicatricial contraction, merely aggravate the evil.

Knowles Renshaw.

Fetterolf, A.—The Anatomy and Relations of the Tonsil in the Hardened Body, with Special Reference to the Proper Conception of the Plica Triangularis. The Principles and Practice of Tonsil Enucleation as based thereon. "Amer. Journ. Med. Sci.," July, 1912.

The writer lays great stress on the importance in operations on the tonsil of the complete removal of the whole structure, in spite of "the occasional brilliant clinical result of an incomplete operation." He is opposed to all so-called "one instrument" operations, but admits that he has seen no cases operated on by the Sluder, Ballenger, or Beck instruments. From the observations which he has made on the anatomy of the tonsil and surrounding parts he has endeavoured to deduce the most efficient method of operating. He regards the plica triangularis as the key to the situation. This structure has always hitherto been described as a fold of mucous-membrane; this, the author is convinced, is an error of omission. "The plica triangularis," he states, "is fundamentally that portion of the tonsil capsule which extends inward and backward beyond the anterior pillar of the fauces." Thus, if it is not attached throughout to the tonsil, that aspect of it which presents toward the latter is likely to have a more or less thick layer of lymphoid tissue between the fibrous and deep mucous layers, resembling

in this respect any other portion of the capsule. Hence, whether in any given case the plica is "free" or "attached" depends merely on the presence or absence of a fossa or crypt external to it, to which the writer gives the name of "anterior tonsillar fossa." This is, of course, distinct from the "superior tonsillar fossa," which he agrees with Fraser in regarding as also intra-capsular. The plica being therefore essentially a part of the capsule, it is of the greatest importance in commencing emucleation to divide only its mucous membrane covering: if its fibrous tissue constituent, which represents the tonsillar capsule, be penetrated, the subsequent dissection will be carried out in the substance of the tonsil, some of which together with the capsule will necessarily be left behind.

Separation is to be effected by blunt instruments and the finger only: sharp instruments are liable to penetrate the capsule, and are actually dangerous if used for separating the tonsil from the posterior wall of the recess because of the presence in this situation of the largest vein of the tonsillar plexus.

The author's method of operation is described at length, the procedure being divided into fifteen stages for the removal of each tonsil. He has employed it with complete success in 200 cases. *Thomas Guthrie.*

Eppinger, A.—Tonsillectomy in Acute Nephritis. "Wien.klin. Woch.," No. 24, 1912.

Acute nephritis frequently follows an apparently simple sore throat, and though this usually passes off in a short time it may become chronic. The progress of the nephritis in such cases is insidious. The principal symptoms are albuminuria and hæmaturia, and an early rise of blood-pressure; but they are not marked, and the case may easily drift on unnoticed to the condition known as secondary contracted kidney. The author describes three recent cases of acute nephritis after tonsillitis, which had all been treated for several months without any improvement. In every case the tonsils were enlarged and fissured, but externally they appeared otherwise healthy. On excising them, however, small collections of evil-smelling pus containing streptococci were found in their deeper layers. Immediately after the extirpation of the tonsils, the acute nephritis, which had withstood treatment for so many months, began to improve, and within a few weeks the urine was free from blood and albumen. The author recommends that in all cases of nephritis with enlarged and fissured tonsils the effect of tonsillectomy should be tried. *Dan McKenzie.*

Kahn, H.—Quinine and Urea Hydrochloride Solution as a Local Anæsthetic for Tonsillectomy. "Therapeutic Gazette," No. 7, July 15, 1912.

The author thinks quinine and urea hydrochloride 1 per cent. comes nearer the ideal local anæsthetic for tonsillectomy than any other so far introduced. It is non-toxic in the dosage required, non-irritating, and reduces the danger of hæmorrhage.

The patient is given a full meal shortly before the operation, as the drug then acts better, and also after the operation there is dysphagia or a few days.

The tonsils, etc., are first swabbed with 20 per cent. cocaine hydrochloride. The quinine and urea solution is then injected into the supra-tonsillar space, anterior and posterior pillars and into the tonsil. Not less than 45 to 60 minims are injected for each tonsil. An interval of ten

to fifteen minutes is allowed to elapse before operating. An assistant is required to hold a tongue depressor. The tonsil is dissected from the anterior pillar from above downwards, it is then seized with forceps and pulled forwards, while it is shelled out of its bed: a snare is passed over the tonsil and tightened till it cuts through the remaining attachments.

Knowles Renshaw.

Koplik (New York).—Infections following Tonsillotomy, with a Consideration of the Forms of such Infections. "Amer. Journ. Med. Sci.," July, 1912.

Having referred to the various infective processes of which the tonsil *in situ* is regarded as the port of entry, the author remarks that operative measures such as tonsillotomy or enucleation must open up a still larger area to the risk of infection. He has observed that after these operations certain forms of infection are apt to arise, and he expresses surprise that those whose work lies in this field of surgery are not impressed with this danger.

Three distinct varieties of septic infection following removal of the tonsils have been observed by the author: (1) The form in which there is obscure fever for a week or more without any endocarditis or other lesions. (2) Those cases in which fever is accompanied by endocarditis of either a mild or a malignant type. (3) A form in which the infection is evidently severely hæmatogenous and causes destructive blood changes, with signs of sepsis, such as profuse hæmorrhagic ecchymotic areas on the surface of the skin, petechiæ, severe hæmorrhages from the bowel, and areas of broncho-pneumonia.

Thomas Guthrie.

EAR.

Kopetzky, Samuel J., M.D.—Meningitis: Its Nature, Cause, Diagnosis, and Principles of Surgical Relief. "Laryngoscope," June, 1912.

The factors underlying the clinical picture are the same in all types of meningitis. The toxic effects from infection of the fluids and tissues of the central nervous system are due to the same tissue reactions whatever the invading organism. As a result of this invasion the available carbohydrate in the spinal fluid is early used up and disappears. This disappearance of the copper-reducing body, excepting in the slowly developing tuberculous infections, is probably the earlier sign of the activity of bacteria in the central nervous system. An early means of diagnosis is thus afforded in cases of suspected meningeal infection, which clearly differentiates meningitis from all other diseases with similar clinical symptoms. Thus, the author found that in thirty-four specimens of cerebro-spinal fluid from cases with meningeal symptoms, but no meningitis, copper reduction was present in all, whilst it was absent in all of thirteen cases with acute meningitis, either otitic, meningococcic, or tuberculous. Owing to some previously undetermined primary factor in meningitis a vicious circle is set up. On the one hand an increased amount of cerebro-spinal fluid, and on the other cedema of the brain and meningeal tissues, act in the limited space of the cranial vault, and exert a compression force on the blood supply, therefore tending to increase the cedema. The author suggests that this primary factor may be the using up of certain constituents of the cerebro-spinal fluid by the organisms as dietary, thus altering its tension and preventing its normal permeation through the membranes of the Pacchionian bodies into the venous blood-

stream, and thus a stasis of the fluid is set up. This stasis results in a compression of the arterial blood supply, and the resulting anæmia increases the intra-cranial pressure. The author has shown that arterial cerebral anæmia produced by ligation of the internal carotids will, in dogs, in a few minutes produce a marked increase of intra-cranial tension, shown by the production of a hernia cerebri through a trephine opening and by the increased flow of fluid from a spinal puncture.

When the intra-cranial tension reaches a degree just above that of the arterial blood-supply the "fight for existence" of the vital centres begins. At first, owing to the activity of the vaso-motor centre, the blood-pressure is raised to a sufficient level to maintain the supply to the respiratory centre, but later the former centre takes on a rhythmic activity, resulting in Traube-Hering waves in the blood-pressure and in periods of respiratory activity and apnoea (Cheyne-Stokes), according to whether the respiratory centre has a sufficient blood-supply or not. The author has been able to confirm the experiments of Kocher and Cushing, and to observe a similar series of events in an artificially induced acute meningitis produced in a dog by cranial injections of a mixed culture of a streptococcus and the hay bacillus. Meanwhile, due to the same factors, an acidosis of the tissues results, and this acidosis, in accordance with the views of Fischer, tends to increase the œdema. The author, in the examination of thirty-seven cases, found that in all acute inflammatory conditions of the meninges the cerebro-spinal fluid showed a varying degree of combined acidity, while in cases with no meningitis the fluid was either alkaline or amphoteric. The metabolism of the tissues involved is interfered with, so that their chief constituent, lecithin, undergoes degeneration, and the poison groups, characterised by cholin, accumulate in the spinal fluid, and add a direct nerve poison to the bacterial toxins. Cholin was found in excess in all cases of acute meningitis examined by the author. The symptoms, therefore, may be grouped into—(1) those dependent on increased intra-cranial pressure, and (2) those dependent on toxins due to the action of the organisms and to the decomposition products of the tissues. Any procedure which places the control of intra-cranial pressure within the grasp of the surgeon is the logical surgical remedy, and the operation devised by Haynes is the simplest and most easily performed to secure this end.

A. J. Wright.

Frey, Hugo.—On the Mechanism of the Auditory Ossicular Chain.

"Verhand. der Deutsch. Otol. Gesell.," May 13 and 14, 1910.

Several arguments are advanced in support of the author's view that there is for all practical purposes no reciprocal movement between the malleus and incus in the conduction of sound. The locked joint capable of allowing some reciprocal movement, which Helmholtz has described as existing between the two bones, is only capable of allowing such movement when the axis of rotation runs below the joint. A diagram will readily demonstrate that in this case both bodies must move in unison both outwards and inwards. A play of action between the two ossicles is not, as has been suggested, necessary to protect the inner ear in case there is a sudden rise of intra-tympanic pressure. In this case the internal pressure on the stapes tends, in part at least, to neutralise the pressure outwards on the other tympanic structures. Excessive outward displacement of the ossicular chain is further prevented by the tendon of the tensor tympani and the ossicular ligaments. The experimental evidence of Helmholtz's view was acquired from specimens the anatomical

integrity of which was not afterwards confirmed. Further, the source of sound used and the manner in which it was conducted were such that they would rather tend to injure the delicate unankylosed joint than to induce it to act in a physiological manner. In further support of his theory the author has examined the anatomical relations of the hammer-ambos joint in suckers, and finds that, as in most species of animals, there is a bony or fibro-cartilaginous ankylosis between the two ossicles; in some species he found a rudimentary joint, which, however, was not associated with any increase of auditory acuteness. He is of opinion that fixation of the joint is more conducive to good hearing than otherwise.

J. B. Horgan.

REVIEW.

Diseases of the Throat, Nose and Ear. By W. G. PORTER, M.B., B.Sc., F.R.C.S.Ed. Bristol: John Wright & Sons, Ltd., 1912. Pp. xii + 275. With 77 illustrations, 44 of which are in colours.

In writing this book, the author's main object has been to provide the practitioner and senior student with a single volume of moderate size embracing sufficient information on the diseases of the regions with which it deals to be of value in practice. It may be said at once that the author has signally succeeded in his task, and has produced a work which contains a large amount of well-digested and accurate information packed in a surprisingly small compass. With the object noted above, he has given special attention to diagnosis and to treatment in so far as the latter can be carried out by the non-specialist, but he has given no descriptions of major operations, contenting himself with their indications and general features.

The book is divided into four sections, dealing with Diseases of the Pharynx, the Larynx, the Nose, and the Ear, and one cannot but admire the variety of the information given and its soundness. Moreover the work is thoroughly up-to-date, the style is good, and the general get-up of the production is all that can be desired. The coloured plates are unusually numerous and well executed. Altogether the work is eminently suited to the purpose for which it is designed.

MacLeod Yearsley.

NATIONAL BUREAU FOR PROMOTING THE GENERAL WELFARE OF THE DEAF.

The next lecture by Dr. J. Kerr Love will deal with "Sporadic Congenital or Infantile Deafness. Syphilitic Deafness," and will be delivered at the Royal Sanitary Institute on Thursday, December 5, at 6 p.m.

BOOKS RECEIVED.

Traité de Laryngoscopie et de Laryngologie, opératoire et clinique. Par le *Th. Hergny*. Traduction française par le *Dr. Chas. Siems*. Paris: Masson & Cie, 1912.

Forschungen und Erfahrungen 1880-1910. Eine Sammlung Ausgewählter Arbeiten. Von *Prof. Dr. Sir Felix Semon*. Zwei Bände, mit 2 Tafeln und zahlreichen Textfiguren. Berlin: August Hirschwald, N.W. Unter den Linden 68, 1912.

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